Appendix D

FEMA Floodplain Maps

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **coordinate system** used in the preparation of this map was State Plane Kentucky (Single Zone) FIPS 1600 US Feet, Lambert Conformal Conic. **Horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid or projection used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov/.

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Based on updated topographic information, this map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables may reflect stream channel distances that differ from what is shown on the map. Also, the road to floodplain relationships for unrevised streams may differ from what is shown on previous maps.

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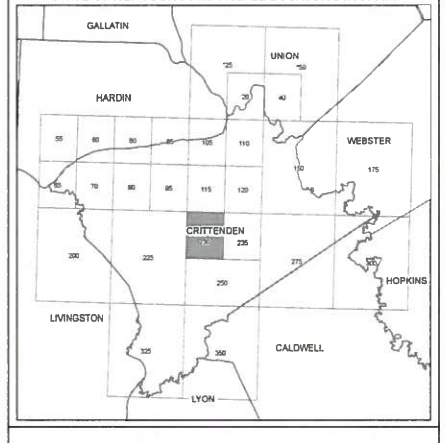
STATE OF KENTUCKY FIRM PANEL LOCATOR DIAGRAM



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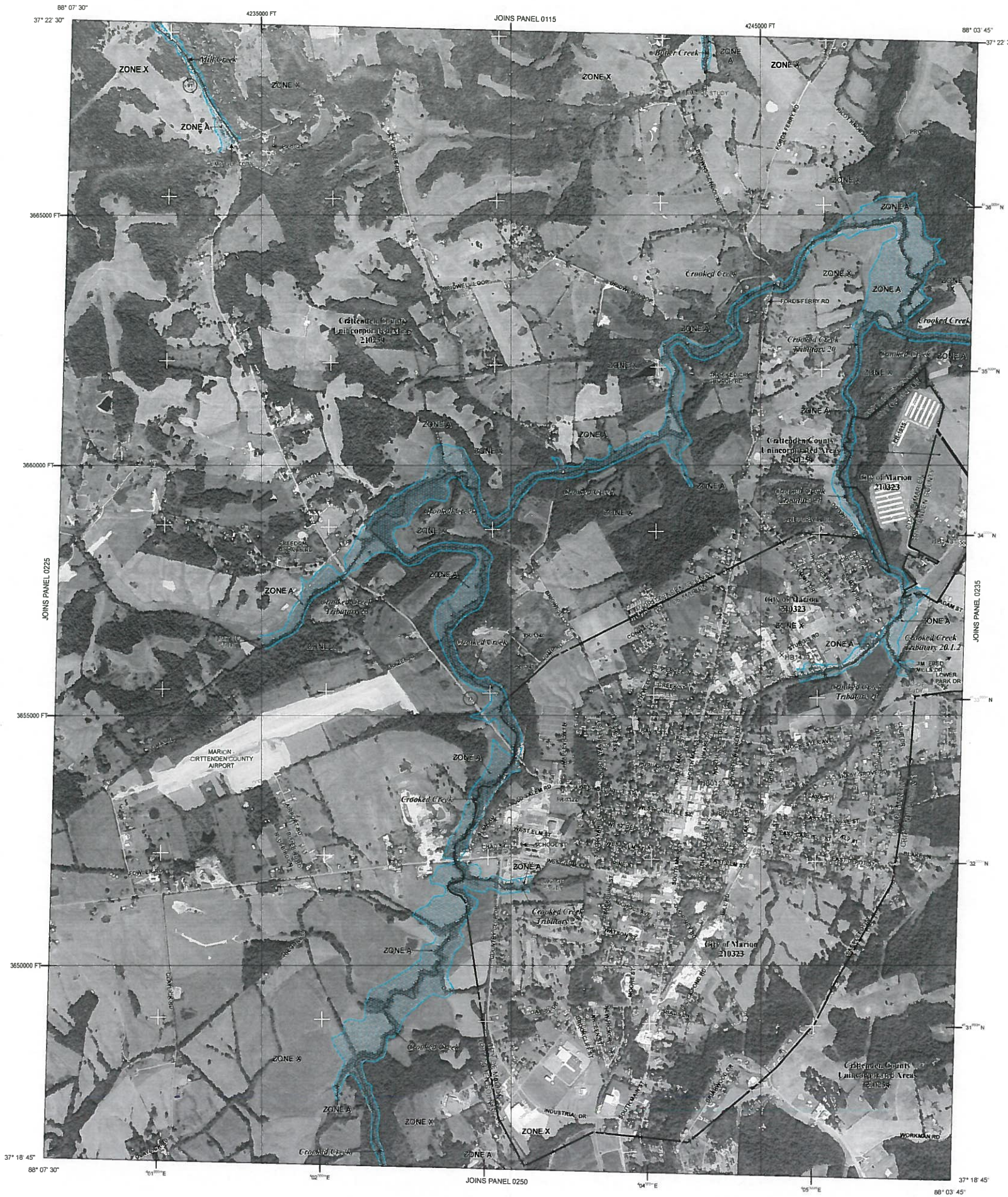

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction, no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAS)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL. 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- (A)—(A) Cross section line
- (23)—(23) Transect line
- 87°07'45", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4278 000m E — 1000-meter Universal Transverse Mercator grid values, zone 16
- 600000 FT — 5000-foot grid ticks: Kentucky State Plane coordinate system (FIPS 1600), Lambert Conformal Conic projection
- DX5510 × — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

June 16, 2009

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0230C

FIRM
FLOOD INSURANCE RATE MAP

CRITTENDEN COUNTY, KENTUCKY
AND INCORPORATED AREAS

PANEL 230 OF 350
(SEE LOCATOR DIAGRAM OR MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CRITTENDEN COUNTY	210254	0230	C
MARION, CITY OF	210323	0230	C

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

EFFECTIVE DATE JUNE 16, 2009

MAP NUMBER 21055C0230C

State of Kentucky
Federal Emergency Management Agency

NOTES TO USERS

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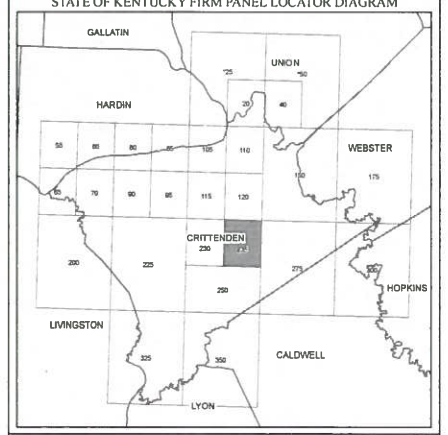

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LEGEND

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FLOODWAY AREAS IN ZONE AE

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OTHER FLOOD AREAS

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COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

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	Floodway boundary
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	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL. 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

A — A	Cross section line
23 — 23	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4276000mE	1000-meter Universal Transverse Mercator grid values, zone 16
600000 FT	5000-foot grid ticks: Kentucky State Plane coordinate system (FIPS 1600), Lambert Conformal Conic projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

June 16, 2009

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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500 0 1000 2000 FEET
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NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0235C

FIRM
FLOOD INSURANCE RATE MAP

CRITTENDEN COUNTY, KENTUCKY
AND INCORPORATED AREAS

PANEL 235 OF 350
(SEE LOCATOR DIAGRAM OR MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
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MARION, CITY OF	210323	0235	C

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EFFECTIVE DATE
JUNE 16, 2009

MAP NUMBER
21055C0235C

State of Kentucky
Federal Emergency Management Agency

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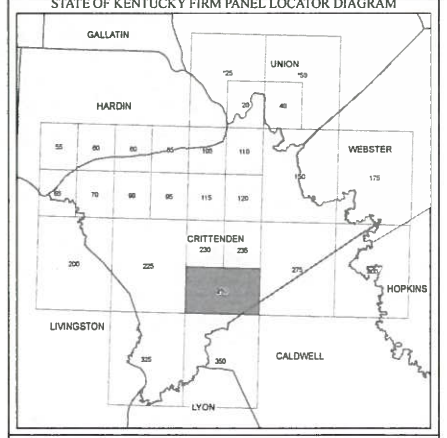
STATE OF KENTUCKY FIRM PANEL LOCATOR DIAGRAM



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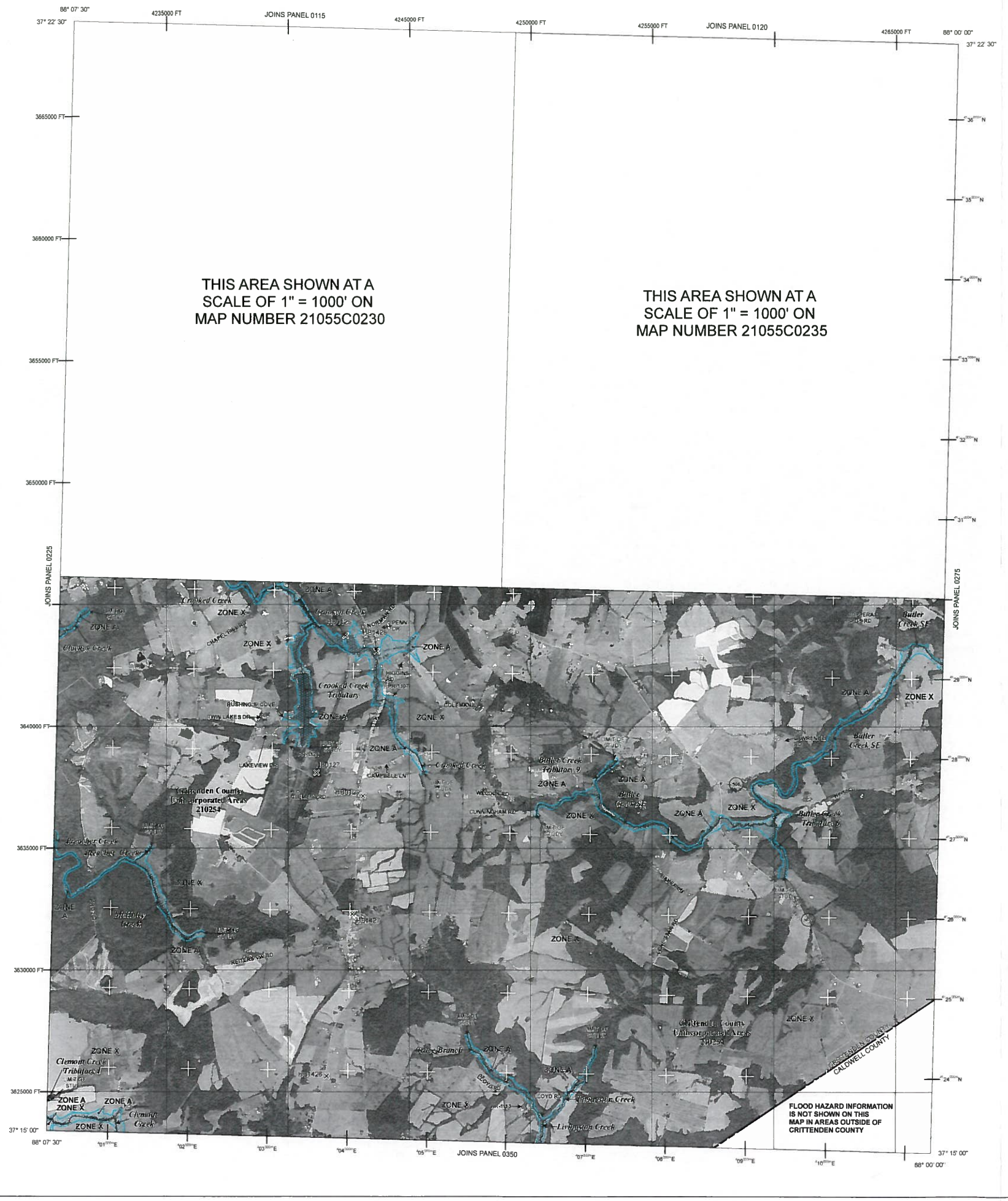

LEGEND

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FLOODWAY AREAS IN ZONE AE

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OTHER FLOOD AREAS

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MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

June 16, 2009

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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600 0 600 1200 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0250C

FIRM
FLOOD INSURANCE RATE MAP

CRITTENDEN COUNTY, KENTUCKY
AND INCORPORATED AREAS

PANEL 250 OF 350
(SEE LOCATOR DIAGRAM OR MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CRITTENDEN COUNTY	210254	0250	C

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

EFFECTIVE DATE
JUNE 16, 2009

MAP NUMBER
21055C0250C

State of Kentucky
Federal Emergency Management Agency

Appendix E

National Wetland Inventory Maps

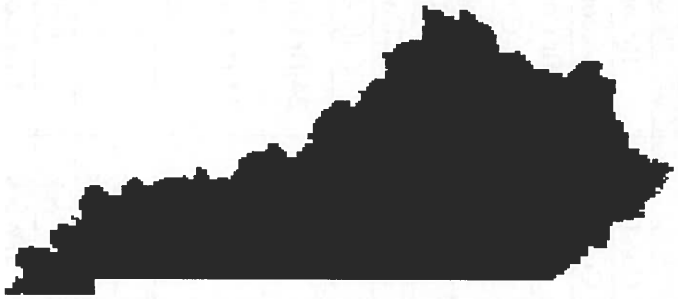
Appendix F

United States Department of Interior, Fish and Wildlife Service, Endangered/Threatened Species

Appendix G

Marion WWTP KPDES Permit

KPDES



KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

PERMIT

PERMIT NO.: KY0020061

AI NO.: 867

AUTHORIZATION TO DISCHARGE UNDER THE

KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

Pursuant to Authority in KRS 224,

City of Marion
217 South Main Street
Marion, Kentucky 42064

is authorized to discharge from a facility located at

Marion Wastewater Treatment Plant
530 Adams Street
Marion, Crittenden County, Kentucky

to receiving waters named

Outfall 001 discharges to Rush Creek at latitude/longitude 37°20'38.5"N/88°4'0.5"W.

in accordance with effluent limitations, monitoring requirements and other conditions set forth in this permit.

This permit shall become effective on April 1, 2013.

This permit and the authorization to discharge shall expire at midnight, March 31, 2018.

February 6, 2013

Date Signed

Sandra L. Gruzesky, Director
Division of Water

1. EFFLUENT AND MONITORING REQUIREMENTS

1.1. Monitoring Locations

The following table lists the outfalls authorized by this permit, the latitude and longitude of each and the DOW assigned KPDES outfall number.

MONITORING LOCATIONS				
Number	**Type**	**Latitude**	**Longitude**	**Description of Outfall**
001	Effluent	37°20'38.5"N	88°4'0.5"W	Treated Domestic Wastewater

1.2. Effluent Limitations and Monitoring Requirements

Beginning on the effective date and lasting through the term of this permit discharges from Outfall 001 shall comply with the effluent limitations.

EFFLUENT LIMITATIONS							MONITORING REQUIREMENTS		
Effluent Characteristic	**Loadings (lbs/day)**		**Concentrations (specify units)**				**Monitoring**		**Sample Type**
	Monthly Average	**Weekly Average**	**Minimum**	**Monthly Average**	**Weekly Average**	**Maximum**	**Location**	**Frequency**	
Flow (Design 0.66 MGD)	Report	Report	N/A	N/A	N/A	N/A	Effluent	Continuous	Recorder
Flow (MGD)	Report	Report	N/A	N/A	N/A	N/A	Influent	Continuous	Recorder
$CBOD_5$	110	165	N/A	20 mg/l	30 mg/l	N/A	Effluent	1/Week	24-Hr Composite
$CBOD_5$	Report	Report	N/A	Report (mg/l)	Report (mg/l)	N/A	Influent	1/Week	24-Hr Composite
Percent Removal $CBOD_5$	N/A	N/A	N/A	85%	N/A	N/A	N/A	1/Month	Calculated
TSS	165	248	N/A	30 mg/l	45 mg/l	N/A	Effluent	1/Week	24-Hr Composite
TSS	Report	Report	N/A	Report (mg/l)	Report (mg/l)	N/A	Influent	1/Week	24-Hr Composite
Percent Removal TSS	N/A	N/A	N/A	85%	N/A	N/A	N/A	1/Month	Calculated
Ammonia (as NH_3N) May 1 – October 31	22.0	33.0	N/A	4.0 mg/l	6.0 mg/l	N/A	Effluent	1/Week	24-Hr Composite
Ammonia (as NH_3N) November 1 – April 30	55.0	83.0	N/A	10 mg/l	15 mg/l	N/A	Effluent	1/Week	24-Hr Composite
E. Coli (colonies/100 ml)[1]	N/A	N/A	N/A	130	240	N/A	Effluent	1/Week	Grab
Dissolved Oxygen	N/A	N/A	7.0 mg/l	N/A	N/A	N/A	Effluent	1/Week	Grab
pH (Standard Units)	N/A	N/A	6.0	N/A	N/A	9.0	Effluent	1/Week	Grab
Total Residual Chlorine	N/A	N/A	N/A	0.011 mg/l	0.019 mg/l	N/A	Effluent	1/Week	Grab
Total Phosphorus	N/A	N/A	N/A	Report (mg/l)	Report (mg/l)	N/A	Effluent	1/Week	24-Hr Composite

EFFLUENT LIMITATIONS							MONITORING REQUIREMENTS		
Effluent Characteristic	Loadings (lbs/day)		Concentrations (specify units)				Monitoring		Sample Type
	Monthly Average	Weekly Average	Minimum	Monthly Average	Weekly Average	Maximum	Location	Frequency	
Total Nitrogen (mg/l)	N/A	N/A	N/A	Report (mg/l)	Report (mg/l)	N/A	Effluent	1/Week	24-Hr Composite
Hardness as mg/l $CaCO_3$	N/A	N/A	N/A	Report	Report	N/A	Effluent	1/Quarter	24-Hr Composite
Total Recoverable Cadmium	N/A	N/A	N/A	Report (mg/l)	Report (mg/l)	N/A	Effluent	1/Quarter	24-Hr Composite
Total Recoverable Copper	N/A	N/A	N/A	Report (mg/l)	Report (mg/l)	N/A	Effluent	1/Quarter	24-Hr Composite
[1]The effluent limitations for *Escherichia Coli* are 30 day and 7 day Geometric Means. Total Nitrogen is the summation of the analytical results for Total Nitrates, Total Nitrites, and Total Kjeldahl Nitrogen									

1.3. Standard Effluent Requirements

The discharges to waters of the Commonwealth shall not produce floating solids, visible foam or a visible sheen on the surface of the receiving waters.

Samples and measurements taken in accordance with the requirements of specified Section 1.2 shall be representative of the volume and nature of the monitored discharge and shall be taken at nearest accessible point after final treatment, but prior to actual discharge to or mixing with the receiving waters or wastestreams from other outfalls.

2. STANDARD CONDITIONS

2.1. Schedule of Compliance

The permittee shall attain compliance with all requirements of this permit on the effective date of this permit unless otherwise stated.

2.2. Standard Conditions for KPDES Permit

2.2.1. Other Permits

This permit has been issued under the provisions of KRS Chapter 224 and regulations promulgated pursuant thereto. Issuance of this permit does not relieve the permittee from the responsibility of obtaining any other permits or licenses required by this Cabinet and other state, federal, and local agencies.

2.2.2. Sufficiently Sensitive Analytical Methods

Analytical methods utilized to demonstrate compliance with the effluent limitations established in this permit shall be sufficiently sensitive to detect pollutant levels at or below the required effluent limit, i.e. the Method Detection Limit (MDL) shall be at or below the effluent limit. In that instance where an EPA-approved method does not exist that has an MDL at or below the established effluent limitation, the permit shall: (1) use the method specified in the permit; or (2) the EPA-approved method with an MDL that is nearest to the established effluent limit.

2.2.3. Antidegradation

For those discharges subject to the provisions of 401 KAR 10:030, Section 1(3)(b)5, the permittee shall install, operate, and maintain wastewater treatment facilities consistent with those identified below:

Aerobic Digestion, Aeration, Activated Sludge, Clarification, Chlorine Disinfection, Dechlorination, Sludge Drying Beds, Landfill Disposal of Sludge

2.2.4. Conditions Applicable to All Permits

The following conditions apply to all KPDES permits.

2.2.4.1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of KRS Chapter 224 and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. Any person who violates applicable statutes or who fails to perform any duty imposed, or who violates any determination, permit, administrative regulation, or order of the cabinet promulgated pursuant thereto shall be liable for a civil penalty as provided at KRS 224.99.010.

2.2.4.2. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for a new permit.

2.2.4.3. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

2.2.4.4. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

2.2.4.5. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

2.2.4.6. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

2.2.4.7. Property Rights

This permit does not convey any property rights of any sort, or any exclusive privilege.

2.2.4.8. Duty to Provide Information

The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Director upon request, copies of records required to be kept by this permit.

2.2.4.9. Inspection and Entry

The permittee shall allow the Director, or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon presentation of credentials and other documents as may be required by law, to:

(1) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
(2) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
(3) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
(4) Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

2.2.4.10. Monitoring and Records

(1) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

(2) Except for records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five (5) years (or longer as required by 401 KAR 5:065 Section 2(10) [40 CFR 503]), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

(3) Records of monitoring information shall include:

(i) The date, exact place, and time of sampling or measurements;
(ii) The individual(s) who performed the sampling or measurements;
(iii) The date(s) analyses were performed;
(iv) The individual(s) who performed the analyses;
(v) The analytical techniques or methods used; and
(vi) The results of such analyses.

(4) Monitoring must be conducted according to test procedures approved under 401 KAR 5:065 Section 2(8) [40 CFR 136] unless another method is required under 401 KAR 5:065 Section 2(9) or (10) [40 CFR subchapters N or O].

(5) KRS 224.99-010 provides that any person who knowingly violates KRS 224.70-110 or other enumerated statutes, or who knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall be guilty of a Class D felony and, upon conviction, shall be punished by a fine of not more than $25,000, or by imprisonment for not more than one (1) year, or both. Each day upon which a violation occurs shall constitute a separate violation.

2.2.4.11. Signatory Requirement

(1) All applications, reports, or information submitted to the Director shall be signed and certified pursuant to 401 KAR 5:060, Section 4 [40 CFR 122.22].

(2) KRS 224.99-010 provides that any person who knowingly provides false information in any document filed or required to be maintained under KRS Chapter 224 shall be guilty of a Class D felony and upon conviction thereof, shall b punished by a fine not to exceed twenty-five thousand dollars ($25,000), or by imprisonment, or by fine and imprisonment, for each separate violation. Each day upon which a violation occurs shall constitute a separate violation

2.2.4.12. Reporting Requirements

2.2.4.12.1. Planned Changes

The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

(i) The alteration or addition to a permitted facility may meet one (1) of the criteria for determining whether a facility is a new source in KRS 224.16-050 [40 CFR122.29(b); or

(ii) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under KRS 224.16-050 [40 CFR 122.42(a)(1)].
(iii) The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

2.2.4.12.2. Anticipated Noncompliance

The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

2.2.4.12.3. Transfers

This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under KRS 224 [CWA; see 40 CFR 122.61; in some cases, modification or revocation and reissuance is mandatory].

2.2.4.12.4. Monitoring Reports

Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(i) Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Director for reporting results of monitoring of sludge use or disposal practices.
(ii) If the permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 401 KAR 5:065 Section 2(8) [40 CFR 136], or another method required for an industry-specific waste stream under 401 KAR 5:065 Section 2(9) or (10) [40 CFR subchapters N or O], the results of such monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Director.
(iii) Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.

2.2.4.12.5. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than fourteen (14) days following each schedule date.

2.2.4.12.6. Twenty-four-Hour Reporting

(i) The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within twenty-four (24) hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

(ii) The following shall be included as information which must be reported within twenty-four (24) hours under this paragraph.

(A) Any unanticipated bypass which exceeds any effluent limitation in the permit. (See §122.41(g).
(B) Any upset which exceeds any effluent limitation in the permit.
(C) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in the permit to be reported within twenty-four (24) hours.

(iii) The Director may waive the written report on a case-by-case basis for reports under paragraph (l)(6)(ii) of this section if the oral report has been received within twenty-four (24) hours.

2.2.4.12.7. Other Noncompliance

The permittee shall report all instances of noncompliance not reported under Sections 2.2.4.12.1, 2.2.4.12.4, 2.2.4.12.5, and 2.2.4.12.6, at the time monitoring reports are submitted. The reports shall contain the information listed in Section 2.2.4.12.6.

2.2.4.12.8. Other Information

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information.

2.2.4.13. Bypass

2.2.4.13.1. Definitions

(i) Bypass means the intentional diversion of waste streams from any portion of a treatment facility.
(ii) Severe property damage means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

2.2.4.13.2. Bypass Not Exceeding Limitations

The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Section 2.2.4.13.1.

2.2.4.13.3. Notice

(i) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten (10) days before the date of the bypass.
(ii) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Section 2.2.4.12.6.

2.2.4.13.4. Prohibition of Bypass

(i) Bypass is prohibited, and the Director may take enforcement action against a permittee for bypass, unless:

(A) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(B) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
(C) The permittee submitted notices as required under Section 2.2.4.13.3.

(ii) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three (3) conditions listed above in Section 2.2.4.13.3.

2.2.4.13.5. Upset

2.2.4.13.5.1. Definition

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

2.2.4.13.5.2. Effect of an Upset

An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of Section 2.2.4.13.5.3 are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

2.2.4.13.5.3. Conditions Necessary for a Demonstration of Upset

A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(i) An upset occurred and that the permittee can identify the cause(s) of the upset;
(ii) The permitted facility was at the time being properly operated; and
(iii) The permittee submitted notice of the upset as required in Section 2.2.4.12.6; and
(iv) The permittee complied with any remedial measures required under Section 2.2.4.4.

2.2.4.13.5.4. Burden of Proof

In any enforcement preceding the permittee seeking to establish the occurrence of an upset has the burden of proof.

2.3. Reporting of Monitoring Results

Monitoring results obtained during each monitoring period must be reported on a preprinted Discharge Monitoring Report (DMR) Form that will be mailed to you. The completed DMR for each monitoring period must be sent to the Division of Water at the address listed below postmarked no later than the 28th day of the month following the monitoring period for which monitoring results were obtained.

Division of Water

Surface Water Permits Branch
Permits Support Section
200 Fair Oaks Lane
Frankfort, Kentucky 40601
Attention: DMR Coordinator

2.4. Reopener Clause

This permit shall be modified, or alternatively revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved in accordance with 401 KAR 5:050 through 5:080, if the effluent standard or limitation so issued or approved:

1. Contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
2. Controls any pollutant not limited in the permit.

This permit may be reopened to implement the findings of a reasonable potential analysis performed by the Division of Water.

This permit shall be reopened if Division of Water determines surface waters are aesthetically or otherwise degraded by substances that:

(a) Settle to form objectionable deposits;
(b) Float as debris, scum, oil, or other matter to form a nuisance;
(c) Produce objectionable color, odor, taste, or turbidity;
(d) Injure, are chronically or acutely toxic to or produce adverse physiological or behavioral responses in humans, animals, fish, and other aquatic life;
(e) Produce undesirable aquatic life or result in the dominance of nuisance species; or
(f) Cause fish flesh tainting.

The permit as modified or reissued under this paragraph shall also contain any other requirements of KRS Chapter 224 when applicable.

3. SPECIAL CONDITIONS

3.1. Pretreatment Program

On February 22, 2008 the permittee's pretreatment program was placed in an inactive status. DOW approved the inactivation of the pretreatment program pursuant to a demonstration by the permittee that conditions have changed such that an active pretreatment program was no longer required. The changes that occurred are as follows: the last significant industrial user, Potter-Brumfield Seimens Corporation, stopped discharging to the Marion Wastewater Treatment Plant when they closed in June 2002.

Although current conditions do not warrant a pretreatment program the permittee shall continue to enforce the general and specific prohibitions listed in Sections 3.1.1 and 3.1.2 respectively of this permit. The permittee shall at a minimum conduct annual industrial wastes surveys to determine if there has been changes to the industrial users' discharges that would necessitate the development an implementation of a pretreatment program. In the event the permittee becomes aware of a new industrial user or modification to an existing industrial user the permittee shall require the submission of an industrial waste survey fore evaluation. Should any industrial waste survey indicate that a pretreatment program is required the permittee reactivate the pretreatment program immediately and shall notify DOW of the reactivation within 5 days. The permittee shall submit to DOW an annual report by January 28th of the following year detailing the results of the annual and any other industrial waste surveys reviewed

3.1.1. General Prohibitions

No user is to introduce to a POTW any pollutant or pollutants that will cause pass through or interference even if the user is not subject to National Pretreatment Standards or any national, state, or local requirements. A user shall have an affirmative defense against a violation of the general prohibitions where the user can demonstrate that:

(1) It did not know or have reason to know that its discharge singly or in conjunction with other discharges would result in pass through or interference with the POTW; and
(2) The discharge met the local limit designed to prevent pass through or interference or in the case of no local limit the user's discharge did not substantially change in nature or substance during the occurrence from the pre-occurrence conditions.

3.1.2. Specific Prohibitions

No user is to introduce to a POTW any of the following pollutants:

(1) Pollutants which create a fire or explosion hazard, including but not limited to, wastestreams with a closed cup flashpoint of less than 140 °F (60 °C);
(2) Pollutants which will cause corrosive structural damage or have a pH less than 5.0 standard units unless the POTW is designed to accommodate such pH levels;
(3) Solid or viscous pollutants in amounts that would obstruct the flow to the POTW thus resulting in interference;
(4) Any pollutant released in a discharge at such a volume or strength as to cause interference in the POTW;
(5) Heat in amounts that will inhibit biological activity in the POTW thus resulting in interference. In no case heat in such quantities that the temperature at the POTW treatment plant exceeds 104 °F (40 °C) unless the POTW requests and the Approval Authority grants alternate temperature limits;
(6) Petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass-through;

(7) Pollutants which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems; and,
(8) Any trucked or hauled waste except, at discharge points designated by the POTW

3.2. Mixing Zone

The permittee did not request a mixing zone.

3.3. Best Management Practices

3.3.1. BMP - General Conditions

3.3.1.1. BMP - Applicability

These conditions apply to all permittees who use, manufacture, store, handle, or discharge any pollutant listed as: (1) toxic under Section 307(a)(1) of the Clean Water Act; (2) oil, as defined in Section 311(a)(1) of the Act; (3) any pollutant listed as hazardous under Section 311 of the Act; or (4) is defined as a pollutant pursuant to KRS 224.01-010(35) and who have ancillary manufacturing operations which could result in (1) the release of a hazardous substance, pollutant, or contaminant, or (2) an environmental emergency, as defined in KRS 224.01-400, as amended, or any regulation promulgated pursuant thereto (hereinafter, the "BMP pollutants"). These operations include material storage areas; plant site runoff; in-plant transfer, process and material handling areas; loading and unloading operations, and sludge and waste disposal areas.

3.3.1.2. BMP - Plan

The permittee shall develop and implement a Best Management Practices (BMP) plan consistent with 401 KAR 5:065, Section 2(10) pursuant to KRS 224.70-110, which prevents or minimizes the potential for the release of "BMP pollutants" from ancillary activities through plant site runoff; spillage or leaks, sludge or waste disposal; or drainage from raw material storage. A Best Management Practices (BMP) plan will be prepared by the permittee unless the permittee can demonstrate through the submission of a BMP outline that the elements and intent of the BMP have been fulfilled through the use of existing plans such as the Spill Prevention Control and Countermeasure (SPCC) plans, contingency plans, and other applicable documents.

3.3.1.3. BMP - Implementation

If this is the first time for the BMP requirement, then the plan shall be developed and submitted to the Division of Water within 90 days of the effective date of the permit. Implementation shall be within 180 days of that submission. For permit renewals the plan in effect at the time of permit reissuance shall remain in effect. Modifications to the plan as a result of ineffectiveness or plan changes to the facility shall be submitted to the Division of Water and implemented as soon as possible.

3.3.1.4. BMP - General Requirements

The BMP plan shall:

a. Be documented in narrative form, and shall include any necessary plot plans, drawings, or maps.

b. Establish specific objectives for the control of toxic and hazardous pollutants.

(1) Each facility component or system shall be examined for its potential for causing a release of "BMP pollutants" due to equipment failure, improper operation, natural phenomena such as rain or snowfall, etc.
(2) Where experience indicates a reasonable potential for equipment failure (e.g., a tank overflow or leakage), natural condition (e.g., precipitation), or other circumstances which could result in a release of "BMP pollutants," the plan should include a prediction of the direction, rate of flow, and total quantity of the pollutants which could be released from the facility as result of each condition or circumstance.

c. Establish specific Best Management Practices to meet the objectives identified under paragraph b of this section, addressing each component or system capable of causing a release of "BMP pollutants."

d. Include any special conditions established in part b of this section.

e. Be reviewed by plant engineering staff and the plant manager.

3.3.1.5. BMP - Specific Requirements

The plan shall be consistent with the general guidance contained in the publication entitled "NPDES Best Management Practices Guidance Document," and shall include the following baseline BMPs as a minimum.

a. BMP Committee
b. Reporting of BMP Incidents
c. Risk Identification and Assessment
d. Employee Training
e. Inspections and Records
f. Preventive Maintenance
g. Good Housekeeping
h. Materials Compatibility
i. Security
j. Materials Inventory

3.3.1.6. BMP - SPCC Plans

The BMP plan may reflect requirements for Spill Prevention Control and Countermeasure (SPCC) plans under Section 311 of the Act and 40 CFR Part 151, and may incorporate any part of such plans into the BMP plan by reference.

3.3.1.7. BMP - Hazardous Waste Management

The permittee shall assure the proper management of solid and hazardous waste in accordance with the regulations promulgated under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1978 (RCRA) (40 U.S.C. 6901 et seq.) Management practices required under RCRA regulations shall be referenced in the BMP plan.

3.3.1.8. BMP - Documentation

The permittee shall maintain a description of the BMP plan at the facility and shall make the plan available upon request to EEC personnel. Initial copies and modifications thereof shall be sent to the following addresses when required by Section 3.3.1.9:

Division of Water
Surface Water Permits Branch
Operational Permits Section
200 Fair Oaks Lane
Frankfort, Kentucky 40601

3.3.1.9. BMP - Modification

The permittee shall amend the BMP plan whenever there is a change in the facility or change in the operation of the facility which materially increases the potential for the ancillary activities to result in the release of "BMP pollutants."

3.3.1.10. BMP - Modification for Ineffectiveness

If the BMP plan proves to be ineffective in achieving the general objective of preventing the release of "BMP pollutants," then the specific objectives and requirements under paragraphs b and c of Section 4, the permit, and/or the BMP plan shall be subject to modification to incorporate revised BMP requirements. If at any time following the issuance of this permit the BMP plan is found to be inadequate pursuant to a state or federal site inspection or plan review, the plan shall be modified to incorporate such changes necessary to resolve the concerns.

3.3.2. BMP - Specific Conditions

3.3.2.1. BMP - Periodically Discharged Wastewaters Not Specifically Covered by Effluent Conditions

The permittee shall include in this BMP plan procedures and controls necessary for the handling of periodically discharged wastewaters such as intake screen backwash, meter calibration, fire protection, hydrostatic testing water, water associated with demolition projects, etc.

4. STATE CONDITIONS

4.1. Outfall Signage

The KPDES permit establishes monitoring points, effluent limitations, and other conditions to address discharges from the permitted facility. In an effort to better document and clarify these locations the permittee should place and maintain a permanent marker at each of the monitoring locations.

4.2. Discharge and Monitoring Point Accessibility

As previously stated in Section 2.2.4.9, the permittee shall allow authorized agency representatives to inspect the facility and collect samples to determine compliance. In order for such monitoring to be conducted either by the permittee or authorized agency personnel all monitoring and discharge points required by this permit shall be readily and safely accessible in all weather conditions.

4.3. Certified Operators

Pursuant to 401 KAR 5:010 the POTW's treatment plant shall be under the primary responsibility of a certified operator holding an active Class 2 treatment certificate:

A treatment plant with a design capacity of more than 50,000 gallons per day, but less than or equal to two (2) million gallons per day shall be under the primary responsibility of a certified operator holding an active Class II, III, or IV treatment certificate.

4.3.1. Application Monitoring

To ensure that sufficient samples are collected and analyzed DOW is imposing annual sampling and reporting for those parameters in Sections A.12 and B.6 of KPDES Form A. The results of the application monitoring shall be submitted on an annual DMR and summarized on the renewal application.

5. ABBREVIATIONS, ACRONYMS AND DEFINITIONS

Abbreviation or Acronym	Full Phrase	Definition
MGD	Million Gallons Per Day	A measure of flow
cfs	cubic feet per second	A measure of flow
SU	Standard Units	A measure of pH
mg/l	milligrams per liter	A measure of pollutant concentration (1000 milligrams = 1 gram)
µg/l	micrograms per liter	A measure of pollutant concentration (1000 micrograms = 1 milligram)
°F	Degrees Fahrenheit	A measure of temperature
°C	Degrees Centigrade or Celsius	A measure of temperature
N/A	Not Applicable	
lbs/day	pounds per day	A measure of pollutant loading
Grab	Grab Sample	A sample taken from a wastestream on a one-time basis without consideration of the flow rate of the wastestream and without consideration of time.
24-Hr Composite	24-hour Composite Sample	Sample composed of discrete equal volume aliquots (100 ml minimum) collected every 15 minutes over a 24-hour period and aggregated by an automated sampling device. The aggregate sample will reflect the average water quality of the compositing or sample period.

STEVEN L. BESHEAR
GOVERNOR

ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION OF WATER
200 FAIR OAKS LANE
FRANKFORT, KENTUCKY 40601
www.kentucky.gov

LEONARD K. PETERS
SECRETARY

FACT SHEET

Marion Wastewater Treatment Plant

KPDES No.: KY0020061

AI No.: 867

Permit Writer: William Shane

Date: February 8, 2013

Public Notice Information

Public Notice Start Date: November 15, 2012

Comment Due Date: December 15, 2012

Information concerning the public notice process may be obtained on the Division of Water's Public Notice Webpage at the following address:

http://dep.gateway.ky.gov/eSearch/Search_Pending_Approvals.aspx?Program=Wastewater&NumDaysDoc=30

Comments may be filed electronically at the following e-mail address: DOWPublicNotice@ky.gov

Or by sending written comments to:

Division of Water
Surface Water Permits Branch
200 Fair Oaks Lane
Frankfort, Kentucky 40601

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DEFINITIONS, ABBREVIATIONS, AND ACRONYMS

30-day average – means the arithmetic mean of pollutant parameter values for samples collected in a period of 30 consecutive days.
401(a) Certification - A requirement of CWA section 401(a) that all federally issued permits be certified by the state in which the discharge occurs. The state certifies that the proposed permit will comply with state water quality standards and other state requirements.
7-day average – means the arithmetic mean of pollutant parameter values for samples collected in a period of 7 consecutive days.
Acute criteria - The highest instream concentration of a toxic substance or an effluent to which an organism can be exposed for one (1) hour without causing an unacceptable harmful effect.
Acute effect - The effect of a stimulus severe enough to rapidly induce an effect; in aquatic toxicity tests, an effect generally observed in 96 hours or less is typically considered acute. When referring to aquatic toxicology or human health, an acute effect is not always measured in terms of lethality.
Acute toxicity - Lethality or other harmful effect sustained by either an indigenous aquatic organism or a representative indicator organism used in a toxicity test, due to a short-term exposure, of ninety-six (96) hours or less, to a specific toxic substance or mixture of toxic substances.
Acute toxicity unit - The reciprocal of the effluent dilution that causes the acute effect, or LC_{50}, by the end of the acute exposure period.
Acute-chronic ratio - The ratio of the acute toxicity, expressed as an LC_{50}, of an effluent or a toxic substance, to its chronic toxicity. It is used as a factor to estimate chronic toxicity from acute toxicity data.
Administrator - means the Administrator of the United States Environmental Protection Agency, or an authorized representative
Adversely affect or adversely change - Means to alter or change the community structure or function, to reduce the number or proportion of sensitive species, or to increase the number or proportion of pollution tolerant aquatic species so that aquatic life use support or aquatic habitat is impaired.
Annual Sewer User Survey – Annual survey conducted by a POTW to determine if conditions warrant the development and implementation of a pretreatment program.
Anti-backsliding - In general, a statutory provision that prohibits the renewal, reissuance, or modification of an existing NPDES permit that contains effluent limitations, permit conditions, or standards that are less stringent than those established in the previous permit.
Antidegradation - A policy developed and adopted as part of a state's water quality standards that ensures protection of existing uses and maintains the existing level of water quality where that water quality exceeds levels necessary to protect fish and wildlife propagation and recreation on and in the water. This policy also includes special protection of water designated as Outstanding National Resource Waters.
Applicable standards and limitations - means all standards and limitations to which a discharge or a related activity is subject pursuant to KRS Chapter 224 and 401 KAR Chapters 4 through 11, including effluent limitations, water quality standards, standards of performance, or toxic effluent standards.
Application - means the document submitted by an applicant to the cabinet that provides information used by the cabinet in the issuance of a permit or approval.
Approval Authority - means the Director in an NPDES State with an approved State pretreatment program and the appropriate Regional Administrator in a non-NPDES State or NPDES State without an approved State pretreatment program.
Approved POTW Pretreatment Program – means a program administered by a POTW that means the requirements of 401 KAR 5:057, Sections 6 and 7.
Average monthly discharge limitation - The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during that month divided by the number of daily discharges measured during that month.
Balanced indigenous community - means a biotic community typically characterized by diversity, the capacity to sustain itself through cyclic seasonal changes, presence of necessary food chain species, and a lack of domination by pollution tolerant species. The community may include historically nonnative species introduced in connection with a program of wildlife management and species whose presence or abundance results from substantial, irreversible environmental modification. Normally such a community does not include species whose presence or abundance is attributable to the introduction of pollutants that will be

eliminated by compliance of all sources with 401 KAR 5:065, and may not include species whose presence or abundance is attributable to alternative effluent limitations imposed pursuant to 401 KAR 5:055.

Best Available Technology Economically Achievable (BAT) - Technology standard established by the CWA as the most appropriate means available on a national basis for controlling the direct discharge of toxic and nonconventional pollutants to navigable waters. BAT limitations in effluent guidelines, in general, represent the best existing performance of treatment technologies that are economically achievable within an industrial point source category or subcategory.

Best Conventional Pollutant Control Technology (BCT) - Technology-based standard for the discharge from existing industrial point sources of conventional pollutants including BOD, TSS, fecal coliform, pH, oil and grease. The BCT is established in light of a two-part cost reasonableness test, which compares the cost for an industry to reduce its pollutant discharge with the cost to a POTW for similar levels of reduction of a pollutant loading. The second test examines the cost-effectiveness of additional industrial treatment beyond BPT. EPA must find limits which are reasonable under both tests before establishing them as BCT.

Best Management Practice (BMP) - means: (a) For agriculture operations, as defined by KRS 224.71-100(3); or (b) For all other purposes: 1. Schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the commonwealth; and 2. Treatment requirements, operating procedures, practices to control site run-off, pollution of surface water and groundwater from nonpoint sources, spillage or leaks, sludge or waste disposal, or drainage from raw material storage(e)

Best Practicable Control Technology Currently Available (BPT) - The first level of technology standards established by the CWA to control pollutants discharged to waters of the U.S. BPT limitations in effluent guidelines are generally based on the average of the best existing performance by plants within an industrial category or subcategory.

Best Practicable Waste Treatment Technology (BPWTT) - generally means the cost effective technology that can treat wastewater, combined sewer overflows, and non-excessive infiltration and inflow in POTWs to meet Secondary Treatment Standards, Water Quality Standards or more stringent state standards. 401 KAR 5:080, Section 2(3) [40 CFR 125.3(a)(1)] requires permits for POTWs to include BPWTT requirements no later than July 1, 1983. The determination of BPWTT is pollutant specific.

Best Professional Judgment (BPJ) - The method used by permit writers to develop technology-based NPDES permit conditions on a case-by-case basis using all reasonably available and relevant data.

Bioassay - A test used to evaluate the relative potency of a chemical or a mixture of chemicals by comparing its effect on a living organism with the effect of a standard preparation on the same type of organism.

Biochemical Oxygen Demand (BOD) - A measurement of the amount of oxygen used by the decomposition of organic material, over a specified time (usually 5 days) in a wastewater sample; it is used as a measurement of the readily decomposable organic content of a wastewater.

Bypass - means the intentional diversion of sewage or waste-streams from a portion of a facility or industrial user's treatment facility.

Calendar day - means for the purpose of this permit, any 24-hour period.

Capacity, Management, Operation, and Maintenance (CMOM) Program -

Carbonaceous Biochemical Oxygen Demand (CBOD) – means the biochemical oxygen demand of carbonaceous sources. This differs from BOD in that BOD measures both nitrogenous and carbonaceous sources, whereas CBOD excludes nitrogenous sources (e.g., nitrifying bacteria) from determination through the addition of a nitrification inhibitor.

Certified operator - means an individual who holds an active certified operator's certificate issued in accordance with 401 KAR 11:050.

Chronic criteria - means the highest instream concentration of a toxic substance or an effluent to which organisms are able to be exposed for ninety-six (96) hours without causing an unacceptable harmful effect.

Chronic effect - The effect of a stimulus that lingers or continues for a relatively long period, often one-tenth of the life span or more. The measurement of a chronic effect can be reduced growth, reduced reproduction, and such, in addition to lethality.

Chronic toxicity - means lethality, reduced growth or reproduction or other harmful effect sustained by either indigenous aquatic organisms or representative indicator organisms used in toxicity tests due to long-term exposures, relative to the life span of the organisms or a significant portion of their life span, due to toxic substances or mixtures of toxic substances.
Chronic Toxicity Unit (TU_C) - means the reciprocal of the effluent dilution that causes twenty-five (25) percent inhibition of growth or reproduction to the test organisms by the end of the chronic exposure period.
Clean Water Act (CWA) - The Clean Water Act is a statute passed by the U.S. Congress to control water pollution. It was formerly referred to as the Federal Water Pollution Control Act of 1972 or Federal Water Pollution Control Act Amendments of 1972 (Public Law 92-500), 33 U.S.C. 1251 *et seq.*, as amended by: Public Law 96-483; Public Law 97-117; Public Laws 95-217, 97-117, 97-440, and 100-04.
Code of Federal Regulations (CFR) - A codification of the final rules published daily in the *Federal Register*. Title 40 of the CFR contains regulations for the protection of the environment.
Cold Water Aquatic Habitat (CAH) - means surface waters and associated substrate that are able to support indigenous aquatic life or self-sustaining or reproducing trout populations on a year-round basis.
Combined Sewers – means a sewer or sewer line designed to carry storm water runoff as well as sanitary wastewater.
Combined Sewer Overflow – means the flow from a combined sewer in excess of the interceptor or regulator capacity that is discharged into a receiving water without going to a POTW.
Compliance Schedule (or Schedule of Compliance) - A schedule of remedial measures included in a permit, including an enforceable sequence of interim requirements (for example, actions, operations, or milestone events) leading to compliance with the CWA and regulations.
Composite Sample - Sample composed of two or more discrete aliquots (samples). The aggregate sample will reflect the average water quality of the compositing or sample period.
Continuous facility discharge - means a discharge that occurs without interruption throughout the operating hours of the facility, except for infrequent shutdowns for maintenance, process changes, or other similar activities.
Control Authority - refers to: (1) the POTW if the POTW's Pretreatment Program Submission has been approved in accordance with the requirements of 401 KAR 5:057, Section 8; or (2) the Approval Authority if the submission has not been approved.
Conventional pollutant –DOW defines as: biochemical oxygen demand (BOD), chemical oxygen demand (COD), total organic carbon (TOC), total suspended solids (TSS), ammonia (as N), bromide, chlorine (total residual), color, fecal coliform, fluoride, nitrate, Kjeldahl nitrogen, oil and grease, E. coli, or phosphorus. EPA defines as: BOD, TSS, fecal coliform bacteria, oil and grease, and pH
Criteria - means specific concentrations or ranges of values, or narrative statements of water constituents that represent a quality of water expected to result in an aquatic ecosystem protective of designated uses of surface waters. Criteria are derived to protect legitimate uses such as aquatic life, domestic water supply, and recreation and to protect human health.
Daily maximum concentration - means the daily determination of concentration as an instantaneous maximum that cannot be exceeded by any sample.
Daily precipitation log - means a daily record of precipitation levels maintained by the permittee to provide proof that a qualifying event has occurred within the preceding 24 hours. This may take the form of daily readings of local rain gages, National Oceanic and Atmospheric Administration data, etc.
Day - means a twenty-four (24) hour period.
Designated Uses - Those uses specified in water quality standards for each waterbody or segment whether they are being attained
Development Document - A report prepared during development of an effluent guideline by EPA that provides the data and methodology used to develop effluent guidelines and categorical pretreatment standards for an industrial category.

Direct discharge - means the discharge of a pollutant into waters of the commonwealth if the discharge is not included under the definition of indirect discharger and does not include a discharge of animal waste onto land by land application if the discharge does not reach the waters of the commonwealth.
Disappearing stream - means an intermittent or perennial surface stream that terminates and drains underground through caves, fractures, or swallets in the stream bed.
Discharge monitoring report (DMR) - The state approved form, including any subsequent additions, revisions, or modifications for the reporting of self-monitoring results by permittees.
Discharge or discharge of a pollutant - means the addition of a pollutant or combination of pollutants to waters of the commonwealth from a point source.
Diversion - means a channel, embankment, or other manmade structure constructed for the purpose of diverting water from one area to another
Division - means the Kentucky Division of Water, within the Department for Environmental Protection, Energy and Environment Cabinet.
Domestic - means relating to household wastes or other similar wastes. It is used to distinguish municipal, household, or commercial water or wastewater services from industrial water or wastewater services.
Domestic sewage - means sewage devoid of industrial or other wastes and that is typical of waste received from residential facilities. It may include wastes from commercial developments, schools, restaurants, and other similar developments.
Domestic water supply (DWS) - means surface waters that with conventional domestic water supply treatment are suitable for human consumption through a public water system as defined in 401 KAR 8:010, culinary purposes, or for use in a food or beverage processing industry; and meet state and federal regulations under the Safe Drinking Water Act, as amended, 42 U.S.C. 300f - 300j-26.
Draft permit -means a document prepared pursuant to 401 KAR 5:075 indicating the cabinet's preliminary decision to issue or deny, modify, revoke and reissue, revoke, or reissue a permit. It includes a notice of intent to revoke a permit and a notice of intent to deny a permit as provided in 401 KAR 5:075. It does not include a proposed permit; a denial of a request for modification, revocation, and reissuance; or a denial of a request for revocation.
E. coli or "Escherichia coli" - means an aerobic and facultative anaerobic gram negative, nonspore forming, rod shaped bacterium that can grow at forty-four and five tenths (44.5) degrees Celsius, that is ortho-nitrophenyl-B-D-galactopyranoside (ONPG) positive, and Methylumbelliferyl glucuronide (MUG) positive. It is a member of the indigenous fecal flora of warm-blooded animals.
Effluent ditch - means that portion of a treatment system that is a discrete, person-made conveyance, either totally owned, leased or under valid easement by the discharger that transports a discharge to surface waters of the commonwealth.
Effluent limitation - Any restriction imposed by the KPDES permit on quantities, discharge rates, and concentrations of pollutants which are discharged from point sources into waters of the Commonwealth
Effluent limitations guidelines (Effluent Guidelines or ELG) - A regulation published by the Administrator under CWA section 304(b) to adopt or revise effluent limitations.
Environmental Protection Agency, "EPA", or "U.S.EPA" - means the U.S. Environmental Protection Agency.
Eutrophication - means the enrichment of a surface water by the discharge or addition of a nutrient.
Exceptional water (EW) - means a surface water categorized as exceptional by the cabinet pursuant to 401 KAR 10:030.
Existing use - means a legitimate use being attained in or on a surface water of the commonwealth on or after November 28, 1975, irrespective of its use designation.
Expanded discharge - means an increase in pollutant loading.
Facility - means: (a) As used in 401 KAR 5:005 or 401 KAR 5:006, a document issued by the cabinet that authorizes the permittee to construct, modify, or operate a facility; or (b) In 401 KAR 5:050 through 401 KAR 5:080 and if used in conjunction with activity, any KPDES point source, or any other facility, including land or related appurtenances, that is subject to regulation under the KPDES program.

Fact Sheet - A document that must be prepared for all draft KPDES permits, the document summarizes the principal facts and the significant factual, legal, methodological and policy questions considered in preparing the draft permit and explains how the public may comment.

Fecal coliform - means the portion of the coliform group of bacteria that are present in the intestinal tract or the feces of warm-blooded animals. It includes organisms that are capable of producing gas from lactose broth in a suitable culture medium within twenty-four (24) hours at forty-four and five-tenths (44.5) degrees plus or minus two-tenths (0.2) degrees C.

Fundamentally Different Factors (FDF) - Those components of a petitioner's facility that are determined to be so unlike those components considered by EPA during the effluent guidelines and pretreatment standards rulemaking that the facility is worthy of a variance from the effluent guidelines or categorical pretreatment standards that would otherwise apply.

Grab sample -A sample taken from a wastestream on a one-time basis without consideration of the flow rate of the wastestream and without consideration of time.

Groundwater - means the subsurface water occurring in the zone of saturation beneath the water table and perched water zones below the B soil horizon including water circulating through fractures, bedding planes, and solution conduits.

Harmonic mean flow - means the reciprocal of the mean of the reciprocal daily flow values.

Hazardous substance Any substance—as designated under Part 116 pursuant to CWA section 311—that presents an imminent and substantial danger to the public health or welfare, including fish, shellfish, wildlife, shorelines, and beaches, upon discharge to navigable waters of the United States.

High Quality Water (HQW) - means a surface water categorized as high quality by the cabinet pursuant to 401 KAR 10:030.

Impact - means a change in the chemical, physical, or biological quality or condition of a surface water.

Impairment - means a detrimental impact to a surface water that prevents attainment of a designated use.

Indigenous aquatic community - means naturally occurring aquatic organisms including bacteria, fungi, algae, aquatic insects, other aquatic invertebrates, reptiles, amphibians, and fishes. Under some natural conditions one (1) or more of the above groups may be absent from a surface water.

Indirect Discharge - means the introduction of pollutants into a POTW from any non-domestic source regulated under section 307(b), (c) or (d) of the Act.

Industrial User or User - means a source of Indirect Discharge.

Industrial Wastewater Treatment Plant (IWWTP) - means a privately owned WWTP with more than ninety (90) percent of the influent flow from sources of industrial waste.

Infiltration – means water other than wastewater that enters a sewer system (including sewer service connections and foundation drains) from the ground through such means as defective pipes, pipe joints, connections, or manholes. Infiltration does not include, and is distinguished from, inflow.

Inflow – means water other than wastewater that enters a sewer system (including sewer service connections)from sources such as, but not limited to, roof leaders, cellar drains, yard drains, area drains, drains from springs and swampy areas, manhole covers, cross connections between storm sewers and sanitary sewers, catch basins, cooling towers, storm waters, surface runoff, street wash waters, or drainage. Inflow does not include, and is distinguished from, infiltration.

Influent concentration – means the concentration of a pollutant in the raw wastewater received by a POTW.

Inhibition concentration of twenty-five (25) percent (IC_{25}) - means the concentration that is determined by a linear interpolation method for estimating the concentration at which a twenty-five (25) percent reduction is shown in reproduction or growth in test organisms, and which statistically approximates the concentration at which an unacceptable chronic effect is not observed.

Injection - means a type of land application in which the waste is placed directly beneath the land surface.

Instantaneous maximum limit - The maximum allowable concentration or other measure of a pollutant determined from the analysis of any discrete or composite sample collected, independent of the flow rate and the duration of the sampling event.

Instantaneous minimum limit - The minimum allowable concentration or other measure of a pollutant determined from the analysis of any discrete or composite sample collected, independent of the flow rate and the duration of the sampling event.
Interference – means a discharge alone or in conjunction with other discharges from other sources that inhibits or disrupts: (1) a POTW's treatment process or operation that results in the violation or an increase in magnitude or duration of a violation of the POTW's KPDES permit or (2) a POTW's sludge process, use, or disposal that prevents the use or disposal of the sludge in compliance with federal, state, or local regulations.
Intermittent water - means a stream that flows only at certain times of the year.
Interstate agency - means an agency of which Kentucky and one (1) or more states is a member established by or under an agreement or compact, or any other agency, of which Kentucky and one (1) or more other states are members, having substantial powers or duties pertaining to the control of pollution as determined and approved by the secretary or administrator pursuant to 33 U.S.C. 1251 – 1387 or KRS Chapter 224.
Karst - means the type of geologic terrain underlain by carbonate rocks where significant solution of rock has occurred due to flowing groundwater.
Kentucky Index of Biotic Integrity (KIBI) – fish community assessment tool as incorporated by reference in 401 KAR 10:030.
Kentucky Intersystem Operational Permit (KISOP) – means a permit issued pursuant to 401 KAR 5:005, Section 26 for the operation of a publicly or privately owned sewer system that discharges to a WWTP or a sewer system that is owned by another person.
Kentucky No Discharge Operational Permit (KNDOP) - means a permit issued pursuant to 401 KAR 5:005 for operating a WWTP that does not have a discharge to a stream, including agricultural waste handling systems and spray irrigation systems.
Kentucky Pollutant Discharge Elimination System (KPDES) - means the Kentucky program for issuing, modifying, revoking and reissuing, revoking, monitoring and enforcing permits to discharge, and imposing and enforcing pretreatment requirements.
KPDES permit - means a Kentucky Pollutant Discharge Elimination System permit issued to a facility, including a POTW, or activity pursuant to KRS Chapter 224 for the purpose of operating the facility or activity.
LC_1 - means that concentration of a toxic substance or mixture of toxic substances that is lethal, or immobilizing if appropriate, to one (1) percent of the organisms tested in a toxicity test during a specified exposure period.
LC_{50} - means that concentration of a toxic substance or mixture of toxic substances that is lethal, or immobilizing if appropriate, to fifty (50) percent of the species tested in a toxicity test during a specified exposure period.
Load Allocation (LA) - The portion of a receiving water's loading capacity that is attributed either to one of its existing or future nonpoint sources of pollution or to natural background sources. Load allocations are best estimates of the loading, which may range from reasonably accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting the loading. Wherever possible, natural and nonpoint source loads should be distinguished.
Macroinvertebrate Bioassessment Index (MBI) – macroinvertebrate community assessment tool as incorporated by reference in 401 KAR 10:030.
Maintain - means to preserve or keep in present condition by not allowing an adverse permanent or long-term change to water quality or to a population of an aquatic organism or its habitat.
Major facility - means a KPDES facility or activity classified as a KPDES facility by the cabinet in cooperation with the regional administrator. Designation as a major industry as used in KRS 224.70-120, does not indicate automatic classification as a major facility.
Maximum Daily Effluent Limitation (MDEL) – means the highest allowable daily discharge of a pollutant.
Measurement - means the ability of the analytical method or protocol to quantify as well as identify the presence of the substance in question.
Method Detection Limit (MDL) - The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte.
Milligrams per liter (mg/l) - mean the milligrams of substance per liter of solution and are equivalent to parts per million in water, assuming unit density.

Million gallons per day (or mgd) - A unit of flow commonly used for wastewater discharges. One million gallon per day is equivalent to 1.547 cubic feet per second.
Minimum Level (ML) - The level at which the entire analytical system must give a recognizable signal and acceptable calibration point. It is equivalent to the concentration of the lowest calibration standard, assuming that all method-specified sample weights, volumes, and cleanup procedures have been employed.
Mixing zone - means a domain of a water body contiguous to a treated or untreated wastewater discharge with quality characteristics different from those of the receiving water. The discharge is in transit and progressively diluted from the source to the receiving system. The mixing zone is the domain where wastewater and receiving water mix.
Monthly average concentration - means the arithmetic average of all sample concentrations collected during a calendar month.
Monthly Operating Report (MOR) – means a monthly report of the process control monitoring performed on a daily basis by the POTW.
National Pollutant Discharge Elimination System (NPDES) - The national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under CWA sections 307, 318, 402, and 405. The term includes approved program. NPDES permits regulate discharges of pollutants from point sources to waters of the United States. Such discharges are illegal unless authorized by an NPDES permit.
National Pretreatment Standard – means any regulation containing pollutant discharge limitations promulgated by the EPA.
Natural Resources Conservation Service (NRCS) - means the organization created pursuant to 7 U.S.C. 6962 in the U.S. Department of Agriculture.
Natural temperature - means the temperature that would exist in waters of the commonwealth without the change of enthalpy of artificial origin, as contrasted with that caused by climatic change or naturally occurring variable temperature associated with riparian vegetation and seasonal changes.
Natural water quality - means those naturally occurring physical, chemical, and biological properties of waters.
Net discharge - means the amount of substance released to a surface water by excluding the influent value from the effluent value if both the intake and discharge are from and to the same or similar body of water.
New Source – means:

(1) any building, structure, facility or installation from which there is or may be a discharge of pollutants, the construction of which commenced after the publication of proposed Pretreatment Standards under section 307(c) of the Act which will be applicable to such source if such Standards are thereafter promulgated in accordance with that section, provided that: (a) The building, structure, facility or installation is constructed at a site at which no other source is located; or (b) The building, structure, facility or installation totally replaces the process or production equipment that causes the discharge of pollutants at an existing source; or (c) The production or wastewater generating processes of the building, structure, facility or installation are substantially independent of an existing source at the same site. In determining whether these are substantially independent, factors such as the extent to which the new facility is integrated with the existing plant, and the extent to which the new facility is engaged in the same general type of activity as the existing source should be considered.

(2) construction on a site at which an existing source is located results in a modification rather than a New Source if the construction does not create a new building, structure, facility or installation meeting the criteria of (1)(ii) or (1)(iii) above, but otherwise alters, replaces, or adds to existing process or production equipment.

(3) Construction of a new source as defined under this paragraph has commenced if the owner or operator has (a) Begun, or caused to begin as part of a continuous onsite construction program: (i) Any placement, assembly, or installation of facilities or equipment; or (ii) Significant site preparation work including clearing, excavation, or removal of existing buildings, structures, or facilities which is necessary for the placement, assembly, or installation of new source facilities or equipment; or (b) Entered into a binding contractual obligation for the purchase of facilities or equipment which are intended to be used in its operation within a

reasonable time. Options to purchase or contracts which can be terminated or modified without substantial loss, and contracts for feasibility, engineering, and design studies do not constitute a contractual obligation under this paragraph.

New Source Performance Standards (NSPS) - Technology standards for facilities that qualify as new sources under § 122.2 and § 122.29. Standards consider that the new source facility has an opportunity to design operations to more effectively control pollutant discharges.
Nonconventional pollutant - DOW defines as pollutant not considered to be a conventional pollutant, including priority pollutants identified in 401 KAR 5:060. EPA defines as all pollutants that are not included in the list of conventional or toxic pollutants in Part 40, includes pollutants such as chemical oxygen demand (COD), total organic carbon (TOC), nitrogen, and phosphorus.
Nonexcessive infiltration – means the quantity of flow which is less than 120 gallons per capita per day (domestic base flow and infiltration) or the quantity of infiltration which cannot be economically and effectively eliminated from a sewer system as determined in a cost-effectiveness analysis.
Nonexcessive inflow – means the maximum total flow rate during storm events which does not result in chronic operational problems related to hydraulic overloading of the treatment works or which does not result in a total flow of more than 275 gallons per capita per day (domestic base flow plus infiltration plus inflow). Chronic operational problems may include surcharging, backups, bypasses, and overflows.
Nonpoint Source - Diffuse pollution sources (i.e., without a single point of origin or not introduced into a receiving stream from a specific outlet). The pollutants are generally carried off the land by stormwater. Atmospheric deposition and hydromodification are also sources of nonpoint source pollution.
North American Industrial Classification System (NAICS) - The North American Industry Classification System (NAICS) is the standard used by federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy.
Nutrients - Chemical elements and compounds found in the environment that plants and animals need to grow and survive. Nutrients include compounds of nitrogen (nitrate, nitrite, ammonia, organic nitrogen) and phosphorus (orthophosphate and others), both natural and man-made.
Operator - means a person involved in the operation of a facility or activity.
Outfall - means, for municipal separate storm sewers, a point source at the point where a municipal separate storm sewer discharges to waters of the Commonwealth, but does not include open conveyances connecting two (2) municipal separate storm sewers, or pipes, tunnels, or other conveyances that connect segments of the same stream or other waters of the Commonwealth and are used to convey waters of the Commonwealth.
Other wastes - means sawdust, bark or other wood debris, garbage, refuse, ashes, offal, tar, oil, chemicals, acid drainage, wastes from agricultural enterprises, and other foreign substances not included within the definitions of industrial wastes and sewage that may cause or contribute to the pollution of waters of the Commonwealth.
Outstanding National Resource Water (ONRW) - means a surface water categorized by the cabinet as an outstanding national resource water pursuant to 401 KAR 10:030.
Outstanding State Resource Water (OSRW) means a surface water designated by the cabinet as an outstanding state resource water pursuant to 401 KAR 10:031.
Overflow - means any intentional or unintentional diversion of flow from a facility.
Owner - means a person who has legal ownership of a facility or activity regulated pursuant to 401 KAR Chapter 5.
Pass Through – means a discharge that exits a POTW into waters of the Commonwealth in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation or increase in magnitude or duration of a violation of any requirement of the POTW's KPDES permit.

Percent Removal – A percentage expression of the removal efficiency across a treatment plant for a given pollutant parameter, as determined from the 30-day average values of the raw wastewater influent pollutant concentration to the facility and 30-day average values of the effluent pollutant concentrations for a given time period.

Permitting Authority - means the agency authorized to issue and enforces specific requirements of the NPDES permit program. The permitting authority may be EPA, or a state, territorial, or tribal agency that has been authorized under CWA section 402(b) to administer the NPDES program within its jurisdiction.

pH - A measure of the hydrogen ion concentration of water or wastewater; expressed as the negative log of the hydrogen ion concentration in mg/L. A pH of 7 is neutral. A pH less than 7 is acidic, and a pH greater than 7 is basic.

Plan of study means (1) a report that contains the following information required for a regional facility plan by 401 KAR 5:006, Section 4: (a) Planning area maps; (b) A discussion of the need for sewer service in the area; (c) Population projections; and (d) An estimation of the twenty (20) year cost by category; or (2) a plan required by the permit for the purposes of collecting data to determine background stream physical, chemical and biological conditions and discharge conditions.

Point source - means any discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, culvert, tunnel, conduit, well, discrete fissure, container, wet seals, mine adits, seeps, or sumps, from which pollutants are or may be discharged.

Pollutant - Dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials (except those regulated under the Atomic Energy Act of 1954, as amended [42 U.S.C. 2011 *et seq.*)], heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. It does not mean a. Sewage from vessels. b. Water, gas, or other material that is injected into a well to facilitate production of oil or gas, or water derived in association with oil and gas production and disposed of in a well, if the well used either to facilitate production or for disposal purposes is approved by authority of the state in which the well is located, and if the state determines that the injection or disposal will not result in the degradation of ground or surface water resources.

Pollutant, Conservative - Pollutants that do not readily degrade in the environment and that are mitigated primarily by dilution after entering receiving waters (e.g., metals, total suspended solids).

Pollutant, Non-Conservative - Pollutants that are mitigated by natural biodegradation or other environmental decay or removal processes in the receiving water after mixing and dilution have occurred (e.g., biochemical oxygen demand, pH, volatile organic compounds

Pretreatment - means the reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a POTW. The reduction or alteration may be obtained by physical, chemical or biological processes, process changes or by other means, except as prohibited by § 403.6(d). Appropriate pretreatment technology includes control equipment, such as equalization tanks or facilities, for protection against surges or slug loadings that might interfere with or otherwise be incompatible with the POTW. However, where wastewater from a regulated process is mixed in an equalization facility with unregulated wastewater or with wastewater from another regulated process, the effluent from the equalization facility must meet an adjusted pretreatment limit calculated in accordance with § 403.6(e).

Pretreatment Requirements - means any substantive or procedural requirement related to Pretreatment, other than a National Pretreatment Standard, imposed on an Industrial User.

Primary Contact Recreation Water (PCRW) - means those waters suitable for full body contact recreation during the recreation season of May 1 through October 31.

Primary Industry Category - Any industry category listed in the NRDC settlement agreement (*Natural Resources Defense Council et al. v. Train,* 8 E.R.C. 2120 [D.D.C. 1976], modified 12 E.R.C. 1833 [D.D.C. 1979]); also listed in Appendix A of Part 122.

Primary responsibility - means personal, first-hand responsibility to conduct or actively oversee and direct procedures and practices necessary to ensure that the wastewater treatment plant or wastewater collection system is operated in accordance with accepted practices and with KRS Chapter 224 and 401 KAR Chapters 5

and 11 having the authority to conduct the procedures and practices necessary to ensure that the wastewater system or any portion thereof is operated in accordance with accepted practices, laws, and administrative regulations of the commonwealth, or to supervise others in conducting these practices.

Priority Pollutants - Those pollutants considered to be of principal importance for control under the CWA based on the NRDC Consent Decree (*NRDC et al. v. Train,* 8 E.R.C. 2120 [D.D.C. 1976], modified 12 E.R.C. 1833 [D.D.C. 1979]); a list of the pollutants is provided as Appendix A to 40 CFR Part 423.

Privately-owned treatment works - means any device or system which is (a) used to treat wastes from any facility whose operator is not the operator of the treatment works and (b) not a "POTW."

Process Wastewater - Any water [that], during manufacturing or processing, comes into direct contact with, or results from the production or use of any raw material, intermediate product, finished product, by-product, or waste product.

Production-Based Standard - A discharge standard expressed in terms of pollutant mass allowed per unit of product manufactured or some other measure of production. 1996 PWM

Productive aquatic community - means an assemblage of indigenous aquatic life capable of reproduction and growth.

Professional engineer or engineer is defined by KRS 322.010(2).

Propagation - means the continuance of a species by successful spawning, hatching, and development or natural generation in the natural environment, as opposed to the maintenance of the species by artificial culture and stocking.

Proposed permit - means a KPDES permit prepared after the close of the public comment period and, if applicable, any public hearing and administrative appeals that is sent to U.S. EPA for review before final issuance by the cabinet. A proposed permit is not a draft permit.

Publicly Owned Treatment Works or POTW – means any device or system used in the treatment, including recycling and recovery of municipal sewage or industrial wastes of a liquid nature which is owned by the Commonwealth or a political subdivision of the Commonwealth, including the sewers, pipes and other conveyances that convey wastewater to the treatment plant.

Public water system - means a system for the provision to the public of water for human consumption through pipes or, after August 5, 1998, other constructed conveyances, if such system has at least fifteen service connections or regularly serves an average of at least twenty-five individuals daily at least 60 days out of the year. Such term includes: any collection, treatment, storage, and distribution facilities under control of the operator of such system and used primarily in connection with such system; and any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system. Such term does not include any "special irrigation district." A public water system is either a "community water system" or a "non-community water system."

RCRA - means the Resource Conservation Recovery Act as amended, 42 U.S.C. 6901 - 6992k.

Recommencing discharger - means a source that recommences discharge after terminating operations.

Recurring discharge - means, as it relates to a sewer system overflow, a discharge that occurs two (2) or more times in a twelve (12) month period.

Regional administrator - means the regional administrator of the Region IV office of the U.S. EPA or the authorized representative of the regional administrator.

Removal Credits – means credit given to an industrial user for the removal a pollutant by a POTWs treatment plant. The credit is given at the discretion of the POTW and cannot exceed the removal rate of the POTW's treatment plant for that pollutant.

Representative indicator organism - means an aquatic organism designated for use in toxicity testing because of its relative sensitivity to toxicants and its widespread distribution in the aquatic environment.

Run-off coefficient - means the fraction of total rainfall that will appear at a conveyance as run-off.

Sanitary Sewer Overflow – means untreated or partially treated sewage overflows from a sanitary sewer collection system.

SARA - means the Superfund Amendments and Reauthorization Act, 42 U.S.C. 9601 – 9675.

Schedule of compliance - means a schedule of remedial measures included in a permit, including an enforceable sequence of interim requirements leading to compliance with KRS Chapter 224 and 401 KAR Chapters 4 through 11.

Secondary Contact Recreation Waters (SCRW) - means those waters suitable for partial body contact recreation, with minimal threat to public health due to water quality.

Section 304(a) Criteria - Developed by EPA under authority of CWA section 304(a) based on the latest scientific information on the relationship that the effect of a constituent concentration has on particular aquatic species and/or human health. This information is issued periodically to the states as guidance for use in developing criteria.

Self-Monitoring - Sampling and analyses performed by a facility to determine compliance with effluent limitations or other regulatory requirements.

Seven-Q-ten or "$7Q_{10}$" - means that minimum average flow that occurs for seven (7) consecutive days with a recurrence interval of ten (10) years.

Significant Industrial User (SIU) – means an indirect discharger that is the focus of control efforts under the national pretreatment program; includes all indirect dischargers subject to national categorical pretreatment standards, and all other indirect dischargers that contribute 25,000 gpd or more of process wastewater, or which make up five percent or more of the hydraulic or organic loading to a municipal treatment plant, subject to certain exceptions [40 CFR 403.3(t)]

Sinkhole - means a naturally occurring topographic depression in a karst area. Its drainage is subterranean and serves as a recharge source for groundwater. It is formed by the collapse of a conduit or the solution of bedrock.

Site - means, as used in 401 KAR 5:060 through 5:080, the land or water area where a facility or activity is physically located or conducted, including adjacent land used in connection with the facility or activity.

Sewage Sludge – is a solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screenings generated during preliminary treatment of domestic sewage in a treatment works (401 KAR 5:065, Section 2(10) [40 CFR 503.9(w)]

Source - means a building, structure, facility, or installation from which there is or may be a discharge of pollutants.

Spill Prevention Control and Countermeasure Plan (SPCC) - A plan prepared by a facility to minimize the likelihood of a spill and to expedite control and cleanup activities if a spill occurs. Such plans are required for certain facilities under the Oil Pollution Prevention Regulations at 40 CFR 112.

Standard Industrial Classification (SIC) Code - A code number system used to identify various types of industries. A particular industry may have more than one SIC code if it conducts several types of commercial or manufacturing activities onsite. An online version of the 1987 SIC Manual <www.osha.gov/pls/imis/sic_manual.html> is available courtesy of the Occupational Safety & Health Administration (OSHA).

STORET - EPA's computerized STOrage and RETrieval water quality data base that includes physical, chemical, and biological data measured in waterbodies throughout the United States. 1996 PWM

Storm Water (or Stormwater) Stormwater runoff, snow melt runoff, and surface runoff and drainage.

Supernatant - means the water that accumulates in the upper portion of a lagoon and contains not greater than two and zero-tenths (2.0) percent total solids by dry weight analysis.

Surface waters - means those waters having well-defined banks and beds, either constantly or intermittently flowing; lakes and impounded waters; marshes and wetlands; and any subterranean waters flowing in well-defined channels and having a demonstrable hydrologic connection with the surface. Lagoons used for waste treatment and effluent ditches that are situated on property owned, leased, or under valid easement by a permitted discharger are not considered to be surface waters of the commonwealth.

Technology-Based Effluent Limitation (TBEL) – means an effluent limit for a pollutant that is based on the capability of a treatment method to reduce the pollutant to a certain concentration or mass loading level. TBELs for POTWs are derived from the secondary treatment regulations in Part 133 or state treatment standards. TBELs for non-POTWs are derived from effluent guidelines, state treatment standards, or by the permit writer on a case-by-case basis using best professional judgment.

Tiered permit limits - Permit limits that apply to the discharge only when a certain threshold (e.g., production level), specific circumstance (e.g., batch discharge), or time frame (e.g., after 6 months, during the months of May through October) triggers their use. Adapted from 1996 PWM

Total Dissolved Solids (TDS) - means the total dissolved solids (filterable residue) as determined by use of the method specified in 40 CFR Part 136.

Total Maximum Daily Load (TMDL) - The sum of the individual wasteload allocations (WLAs) for point sources and load allocations (LAs) for nonpoint sources and natural background. If a receiving water has only one point source discharger, the TMDL is the sum of that point source WLA plus the LAs for any nonpoint sources of pollution and natural background sources, tributaries, or adjacent segments. TMDLs can be expressed in terms of either mass per time, toxicity, or other appropriate measure. If best management practices (BMPs) or other nonpoint source pollution controls make more stringent load allocations practicable, then wasteload allocations can be made less stringent. Thus, the TMDL process provides for nonpoint source control tradeoffs.

Total Suspended Solids (TSS) - means the total suspended solids (non-filterable residue) as determined by use of the method specified in 40 CFR Part 136.

Toxic Pollutant - Any pollutant listed as toxic under CWA section 307(a)(1) or, in the case of sludge use or disposal practices, any pollutant identified in regulations implementing CWA section 405(d).

Toxic substance - means a substance that is bioaccumulative, synergistic, antagonistic, teratogenic, mutagenic, or carcinogenic and causes death, disease, a behavioral abnormality, a physiological malfunction, or a physical deformity in an organism or its offspring or interferes with normal propagation.

Toxicity Reduction Evaluation (TRE) - A site-specific study conducted in a step-wise process designed to identify the causative agent(s) of effluent toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in effluent toxicity.

Toxicity Test – means a procedure to determine the toxicity of a chemical or an effluent using living organisms. A toxicity test measures the degree of effect on exposed test organisms of a specific chemical or effluent.

Treatability Manual - Five-set library of EPA guidance manuals that contain information related to the treatability of many pollutants. The manual may be used in developing effluent limitations for facilities and pollutants, which, at the time of permit issuance, are not subject to industry-specific effluent guidelines. The five volumes that comprise this series consist of Volume I – Treatability Data (EPA-600/8-80-042a); Volume II – Industrial Descriptions (EPA-600/8-80-042b); Volume III – Technologies (EPA-600/8-80- 042c); Volume IV – Cost Estimating (EPA-600/8-80-042d); and Volume V – Summary (EPA-600/8-80-042e).

UIC - means Underground Injection Control.

Underground injection control well - means a well used for the emplacement of fluids into the subsurface.

Upset - means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

Variance - means a mechanism or provision pursuant to 401 KAR Chapter 5 that allows modification to or waiver of the generally applicable effluent limitation requirements or time deadlines.

Warm Water Aquatic Habitat (WAH) - means a surface water and associated substrate capable of supporting indigenous warm water aquatic life.

Water or Waters of the Commonwealth means and includes any and all rivers, streams, creeks, lakes, ponds, impounding reservoirs, springs, wells, marshes, and all other bodies of surface or underground water, natural or artificial, situated wholly or partly within or bordering upon the Commonwealth or within its jurisdiction

Water Quality Management Plan (WQM plan) - means: (a) A plan consisting of initial plans produced in accordance with 33 U.S.C. 1288 and 1313 and certified and approved updates to those plans; or (b) A state or area-wide waste treatment management plan developed and updated in accordance with 33 U.S.C. 1281, 1285j, 1288, and 1313e and 40 CFR Part 130.

Water Quality Standard - means an administrative regulation promulgated by the cabinet establishing the designated use of a surface water and the water quality criteria necessary to maintain and protect that designated use.

Water Quality-Based Effluent Limit(s) - means effluent limits derived from Kentucky's Water Quality Standards.
Well or water well - means any excavation or opening in the surface of the earth that is drilled, cored, bored, washed, driven, jetted, or otherwise constructed when the actual or intended use in whole or part of an excavation is the removal of water for any purpose, including but not limited to culinary and household purposes, animal consumption, food manufacture, use of geothermal resources for domestic heating purposes and industrial, irrigation, and dewatering purposes, but not including wells to be used for watering stock or for general farmstead use if the wells do not provide water for human consumption
Wellhead protection area - means: (a) The surface and subsurface area surrounding a water well, well field, or spring, supplying a public water system, through which pollutants are reasonably likely to move toward and reach the water well, well field, or spring; or (b) An area defined as a wellhead protection area in a county water supply plan.
Wetlands - means land that has a predominance of hydric soils and that is inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of hydrophytic vegetation typically adapted for life in saturated soil conditions.
Zone of initial dilution (ZID) - means the limited area permitted by the cabinet surrounding or downstream from a discharge location where rapid, first-stage mixing occurs. The zone of initial dilution is the domain where wastewater and receiving water initially mix.

ACRONYMS AND ABBREVIATIONS			
Acronym or abbreviation	**Full phrase**	**Acronym or abbreviation**	**Full phrase**
7Q10	7-day, 10-year Low Flow	ML	Minimum Level
ACR	Acute-to-Chronic Ratio	N/A	Not Applicable
AML	Average Monthly Limitation	NEMI	National Environmental Methods Index
ASR	Alternative State Requirement	NOAA	National Oceanic and Atmospheric Administration
AWL	Average Weekly Limitation	NOEC	No Observable Effect Concentration
BAT	Best Available Technology Economically Achievable	NPDES	National Pollutant Discharge Elimination System
BCT	Best Conventional Pollutant Control Technology	O&G	Oil and Grease
BPJ	Best Professional Judgment	°C	Degrees Centigrade or Celsius
BPT	Best Practicable Control Technology Currently Available	°F	Degrees Fahrenheit
CAH	Cold Water Aquatic Habitat	ONRW	Outstanding National Resource Water
CFR	*Code of Federal Regulations*	OSRW	Outstanding State Resource Water
cfs	Cubic Feet per Second	PCR	Primary Contact Recreation
CSO	Combined Sewer Overflow	PSNS	Pretreatment Standard New Source
CWA	Clean Water Act	RBP	Rapid Bioassessment Protocol
DMP	Division of Mine Permits	SCR	Secondary Contact Recreation
DMR	Discharge Monitoring Report	SIC	Standard Industrial Classification
DO	Dissolved Oxygen	SIU	Significant Industrial User
EL	Effluent Limit	SPCC	Spill Prevention Control and Countermeasure
ELG	Effluent Limitations Guidelines or Effluent Guidelines	SS	Settleable Solids
ELGF	Effluent Limitation Guideline Factor	SSO	Sanitary Sewer Overflow
EPA	U.S. Environmental Protection Agency	STORET	EPA Storage and Retrieval Database

ACRONYMS AND ABBREVIATIONS			
Acronym or abbreviation	**Full phrase**	**Acronym or abbreviation**	**Full phrase**
ESA	Endangered Species Act	SU	Standard Units
EW	Exceptional Water	TBEL	Technology-Based Effluent Limit(s)
FR	*Federal Register*	TIE	Toxicity Identification Evaluation
FWS	U.S. Fish and Wildlife Service	TMDL	Total Maximum Daily Load
GC/MS	Gas Chromatography/Mass Spectroscopy	TRE	Toxicity Reduction Evaluation
gpd	Gallons per Day	TSD	Technical Support Document for Water Quality-based Toxics Control
HQW	High Quality Water	TSS	Total Suspended Solids
IC	Inhibition Concentration	TTO	Total Toxic Organics
KIBI	Kentucky Index of Biological Integrity	TU	Toxic Units
LA	Load Allocation	TU_A	Toxic Units – Acute
lbs/day	Pounds per Day	TU_c	Toxic Units – Chronic
LC_1	Lethal Concentration to 1% of test organisms	TWTDS	Treatment Works Treating Domestic Sewage
LC_{50}	Lethal Concentration to 50% of test organisms	U.S.C.	*United States Code*
LOEC	Lowest Observed Effect Concentration	UAA	Use Attainability Analysis
LTA	Long-Term Average	USGS	United States Geological Survey
LTCP	Long-Term Control Plan	WET	Whole Effluent Toxicity
MBI	Macroinvertebrate Bioassessment Index	WLA	Waste Load Allocation
MDEL	Maximum Daily Effluent Limitation	WQBEL	Water Quality-Based Effluent Limit(s)
MDL	Method Detection Limit	WQS	Water Quality Standard(s)
MEP	Maximum Extent Practicable	µg/L	Micrograms per Liter
mg/L	milligrams per liter	pCi/l	Pico Curies per Liter
MGD	Million Gallons per Day		

1. LIMITS AND REQUIREMENTS DEVELOPMENT

This section of the fact sheet provides information regarding the general process for the development of limits and requirements for most KPDES permits. Some processes and requirements are universal and apply to all permits, while others are specific to particular categories of permits. Section 2 presents permit-specific information regarding the development of effluent limitations and requirements.

Pursuant to 401 KAR 5:065, Section 2(4) [40 CFR 122.44], each federally- or delegated state-issued NPDES permit shall include conditions meeting technology-based effluent limitations and standards and water quality standards and state requirements. For new sources or new dischargers, these technology-based limitations and standards are subject to the provisions of 401 KAR 5:065, Section 6 [40 CFR 122.29].

1.1. Technology-Based Effluent Limitations

401 KAR 5:065, Section 2(4) [40 CFR 122.44(a)(1)] requires the imposition of effluent limitations and standards promulgated under Section 301 of the Clean Water Act (CWA), or new source performance standards promulgated under section 306 of the CWA, on a case-by-case determination under Section 402(a)(1) of the CWA, or a combination of the three, in accordance with 401 KAR 5:080, Section 2(3) [40 CFR 125.3]. In accordance with Section 301(b) of the CWA, 401 KAR 5:080, Section 2(3) [40 CFR 125.3] establishes the minimum technology-based treatment requirements which are to be imposed on permits issued under section 402 of the CWA. These standards are divided into two categories: Publicly Owned Treatment Works (POTWs) and dischargers other than POTWs (Industrial).

For POTWs 401 KAR 5:080, Section 2(3) [40 CFR 125.3(a)(1)] requires two categories of technology based effluent standards; Secondary Treatment Standards and Best Practicable Waste Treatment Technology (BPWTT).

1.1.1. Secondary Treatment

Secondary Treatment Standards are defined in 401 KAR 5:080, Section 8 [40 CFR 133]. The following table summarizes these standards.

SECONDARY TREATMENT STANDARDS			
Effluent Characteristic	**30 Day Average**	**7 Day Average**	**Percent Removal**
Biochemical Oxygen Demand (BOD_5)	30 mg/l	45 mg/l	85 %
Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)	25 mg/l	40 mg/l	85 %
Total Suspended Solids (TSS)	30 mg/l	45 mg/l	85 %
pH	Shall be maintained between 6.0 and 9.0 standard units		

401 KAR 5:080, Section 2(3) [40 CFR 125.3(a)(1)] requires permits for POTWs to include Secondary Treatment Standards from the date of permit issuance.

1.1.1.1. Special Considerations

401 KAR 5:080, Section 8(4) [40 CFR 133.103] provides for the following special consideration:

(1) Combined Sewers
(2) Industrial Wastes
(3) Waste Stabilization Ponds

(4) Less concentrated influent wastewater for separate sewers
(5) Less concentrated influent wastewater for combined sewers during dry weather

1.1.1.1.1. Combined Sewers

On a case-by-case basis when a treatment works is unable to meet the percentage removal requirements due to wet weather flows received from combined sewers DOW may establish an alternate percentage removal level.

1.1.1.1.2. Industrial Wastes

When a POTW receives wastes from an industrial facility that is subject to an effluent guideline that permits BOD_5 and TSS concentrations less stringent than the secondary treatment standards the values for BOD_5 and TSS may be adjusted provided:

(1) The permitted discharge of such pollutants, attributable to the industrial category, would not be greater than that which would be permitted under effluent guideline if such industrial category were to discharge directly into the navigable waters, and
(2) The flow or loading of such pollutants introduced by the industrial category exceeds 10 percent of the design flow or loading of the publicly owned treatment works.

1.1.1.1.3. Waste Stabilization Ponds

The Director may establish alternate TSS concentrations for waste stabilization ponds when:

(1) The waste stabilization pond is the principal process used for secondary treatment; and
(2) Operation and maintenance data indicate that secondary treatment levels for TSS cannot be achieved.

Such an alternate TSS concentration shall be equal to the effluent concentration achieved 90 percent of the time waste stabilization ponds within the State that are achieving the secondary treatment levels for BOD_5.

1.1.1.1.4. Less concentrated influent wastewater for separate sewers

A lower percent removal requirement or mass loading limit may be substituted for the secondary treatment percent removal requirements when the permittee satisfactorily demonstrates that:

(1) The treatment works is consistently meeting, or will consistently meet, its permit effluent concentration limits but its percent removal requirements cannot be met due to less concentrated influent wastewater,
(2) To meet the percent removal requirements, the treatment works would have to achieve significantly more stringent limitations than would otherwise be required by the concentration- based standards, and
(3) The less concentrated influent wastewater is not the result of excessive I/I.

The determination of whether the less concentrated wastewater is the result of excessive I/I will use the definition of excessive I/I plus the additional criterion that inflow is non-excessive if the total flow to the POTW (i.e., wastewater plus inflow plus infiltration) is less than 275 gallons per capita per day.

1.1.1.1.5. Less concentrated influent wastewater for combined sewers during dry weather

A lower percent removal requirement or mass loading limit may be substituted for the secondary treatment percent removal requirements when the permittee satisfactorily demonstrates that:

(1) The treatment works is consistently meeting, or will consistently meet, its permit effluent concentration limits, but the percent removal requirements cannot be met due to less concentrated influent wastewater;
(2) To meet the percent removal requirements, the treatment works would have to achieve significantly more stringent effluent concentrations than would otherwise be required by the concentration-based standards; and
(3) The less concentrated influent wastewater does not result from either excessive infiltration or clear water industrial discharges during dry weather periods.

The determination of whether the less concentrated wastewater results from excessive infiltration plus the additional criterion that either 40 gallons per capita per day (gpcd) or 1500 gallons per inch diameter per mile of sewer (gpdim) may be used as the threshold value for that portion of the dry weather base flow attributed to infiltration. If the less concentrated influent wastewater is the result of clear water industrial discharges, then the treatment works must control such discharges pursuant to 401 KAR 5:080, Section 6 [40 CFR part 403].

1.1.1.2. Treatment Equivalent to Secondary Treatment

Treatment works may be eligible for the equivalent to secondary treatment standards summarized in the following table:

EQUIVALENT TO SECONDARY TREATMENT STANDARDS			
Effluent Characteristic	**30 Day Average**	**7 Day Average**	**Percent Removal**
Biochemical Oxygen Demand (BOD_5)	45 mg/l	65 mg/l	65 %
Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)	40 mg/l	60 mg/l	65 %
Total Suspended Solids (TSS)	45 mg/l	65 mg/l	65 %
pH	Shall be maintained between 6.0 and 9.0 standard units		

The following criteria must be met for a treatment system to be eligible for these technology based standards:

(1) The BOD5 and TSS effluent concentrations consistently achievable through proper operation and maintenance (§ 133.101(f)) of the treatment works exceed the minimum level of the effluent quality set forth in §§ 133.102(a) and 133.102(b),
(2) A trickling filter or waste stabilization pond is used as the principal process, and
(3) The treatment works provide significant biological treatment of municipal wastewater.

1.1.2. Best Practicable Waste Treatment Technology (BPWTT)

BPWTT however has not been defined by EPA but generally means the cost effective technology that can treat wastewater, combined sewer overflows, and non-excessive infiltration and inflow in POTWs to meet Secondary Treatment Standards, Water Quality Standards or more stringent state standards. 401 KAR 5:080, Section 2(3) [40 CFR 125.3(a)(1)] requires permits for POTWs to include BPWTT requirements no later than July 1, 1983. The determination of BPWTT is pollutant-specific.

1.2. Water Quality Based Effluent Limitations

401 KAR 5:065, Section 2(4) [40 CFR 122.44(d)(1)] requires the imposition of water quality standards and state requirements to consider any requirements in addition to or more stringent than promulgated effluent limitations guidelines or standards under Sections 301, 304, 306, 307, 318 and 405 of the CWA necessary to achieve water quality standards established under Section 303 of the CWA, including state narrative criteria for water quality.

401 KAR 5:065, Section 2(4) [40 CFR 122.44(d)(1)(i)] stipulates that limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality.

When determining whether a discharge causes, has the reasonable potential to cause, or contributes to an instream excursion above a narrative or numeric criteria within a state water quality standard, the permitting authority shall use procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant or pollutant parameter in the effluent, the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity), and where appropriate, the dilution of the effluent in the receiving water, pursuant to 401 KAR 5:065, Section 2(4) [40 CFR 122.44(d)(1)(ii)]. For any discharge causing, having the reasonable potential to cause, or contribute to an instream excursion above the allowable ambient concentration of a state numeric criteria within a state water quality standard for an individual pollutant, the permit must contain effluent limits for that pollutant.

When the permitting authority determines that a discharge causes, has the reasonable potential to cause, or contributes to an instream excursion above the numeric criterion for whole effluent toxicity, the permit must contain effluent limits for whole effluent toxicity.

401 KAR 5:065, Section 2(4) [40 CFR 122.44(d)(1)(vi)] requires the permitting authority to establish effluent limits for a specific chemical that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contribute to an excursion above a narrative criterion within the state water quality standard.

1.2.1. Reasonable Potential Analysis

In late 1999 and early 2000, the Division of Water (DOW) documented its procedures for conducting a reasonable potential analysis. In June 2000, this documentation entitled *Permitting Procedures for Determining Reasonable Potential* (Natural Resources and Environmental Protection Cabinet, Division of Water, May 1, 2000) was submitted to EPA Region IV for review. On July 7, 2000, EPA issued a letter approving the Division of Water's procedures. Both chemical-specific numeric and whole effluent toxicity (WET) procedures were developed.

1.2.1.1. Chemical-Specific Procedures

When conducting a chemical-specific reasonable potential analysis DOW must first determine the pollutants of concern. Depending on the type of facility being permitted, the wastewaters discharged and the source of the pollutants, this analysis may be preformed on a select number of pollutants or may be preformed on the entire list of water quality standards found in 401 KAR 10:031. DOW determines the pollutants of concern through the review of the permit application, applicable effluent guidelines, the water quality standards, Discharge Monitoring Reports (DMRs) for existing facilities, etc. For municipal permits this review will include verification of industrial user contribution and, for those with approved pretreatment programs, toxic scans of influent, effluent, and sludge in addition to audits and inspections.

1.2.1.1.1. Numeric Procedures

If DOW determines that a promulgated Effluent Limitation Guideline (ELG) applies or has developed limits for a pollutant based upon its Best Professional Judgment (BPJ), then reasonable potential is considered to exist and effluent limitations and monitoring are imposed in the permit. For pollutants where neither an ELG nor BPJ developed limits apply DOW shall develop a Waste Load Allocation (WLA) for the pollutant to determine if reasonable potential exists. DOW utilizes one or more of the computer models in subsequent sections to develop WLAs, taking into account site-specific background receiving water conditions.

The models use actual or predicted background data and discharge data. In running these models, DOW considers five (5) data points as sufficient dataset in most cases. In cases where insufficient data is available, DOW may condition the permit to include a monitoring-only requirement to generate the data; to require additional data collection prior to the development of the permit; or, in cases where the pollutant concentration in the wastewater is not highly variable, a single data point may be used. While most effluents exhibit a lognormal distribution relative to concentrations of constituents being released, DOW has elected not to assume any coefficient of variation for the data set and instead prefers to use the average concentration or loading as indicative of future discharge.

The output of the WLA is compared to the discharge quality to determine reasonable potential using the following criteria: If the average discharge quality is less than 70% of the WLA then monitoring may not be required; if within the range of 70% to 90% then monitoring shall be required; if greater than 90% then a limit shall be required. In the case where insufficient data, i.e. less than 5 data points, exists, or where predicted values were used the permit shall require monitoring for the pollutants at a frequency of once per month for the first year at the end of which a new reasonable potential analysis shall be conducted and the permit may be reopened to modify the conditions.

1.2.1.1.2. Narrative Procedures

DOW uses biotic indices, as discussed in 1.2.2.1.3.3, to assess streams to determine the level of support for aquatic life. These indices are used to implement Kentucky's narrative criteria. DOW also uses these indices to determine the reasonable potential for the effluent to adversely affect the aquatic community.

Site-specific data is necessary in order to address reasonable potential to cause or contribute to an excursion from narrative criteria. DOW uses a single baseline data point to determine the level of existing support prior to commencement of the permitted activity. In cases where baseline data is unavailable, DOW may require data collection prior to the development of the permit or condition the permit to include a requirement to generate the data. Additional sample data is required to determine whether reasonable potential to cause an excursion from the narrative standard exists after the permitted activity commences. DOW compares the additional data to baseline biotic indices. Should negative changes in the biotic indices occur, then reasonable potential may exist and DOW may require either an action by the permittee or modification of the permit. Should the negative change in the biotic indices be of sufficient scale as to cause a categorical decline, e.g. moving from the Fair category to the Poor category, then reasonable potential has been demonstrated. A categorical decline is an excursion of the narrative criteria and a violation of the permit unless demonstrated by the permittee that the categorical decline is a result of other causes.

1.2.1.2. Whole Effluent Toxicity Procedures

Complex wastestreams have a number of variable contributing sources which may be individually toxic or collectively act synergistically to cause toxicity and therefore have present a reasonable potential to cause or contribute to instream toxicity. Those industrial facilities which have been rated as "majors" using EPA's major rating protocols and municipalities with approved pretreatment programs are considered to have a reasonable potential by DOW and therefore have whole effluent toxicity (WET) testing included in the permit.

Additionally, 401 KAR 5:065, Section 2(4) [40 CFR 122.44(d)(vi)(C)] allows for the establishment of limits on an indicator parameter for narrative water quality standards. 401 KAR 10:031, Section 4 (1)(f) and (g) include Kentucky's narrative standards for TDS or SC and TSS respectively, which should not be changed to

the extent that the indigenous aquatic community is affected. Coupled with site-specific biotic surveys, DOW uses WET testing as an indicator parameter for these pollutants.

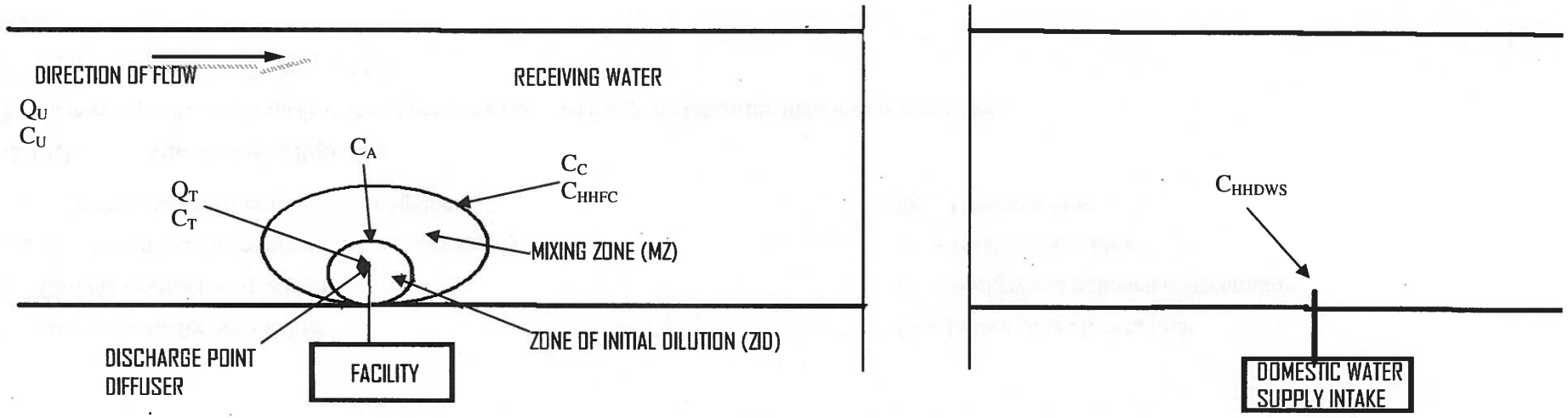
1.2.2. Derivation of Limitations

1.2.2.1. Chemical-specific Criteria

The allowable instream concentrations for specific pollutants are found in 401 KAR 10:031, Section 6(1) Table 1. These water quality criteria are divided into the categories of those for the protection of human health and aquatic life. These categories are further divided into the subcategories of Domestic Water Supply (C_{HHDWS}) and Fish Consumption (C_{HHFC}) for human health and Acute Criteria (C_A) and Chronic Criteria (C_C) for aquatic life. Section 4(2) of 401 KAR 10:029 specify the points within the receiving stream where AC, CC, and FC criteria apply. The point where DWS criteria apply is specified by 401 KAR 10:031, Section 3. This section also specifies the stream flows that are used in derivation of water quality based effluent limitations. The following summarizes these requirements.

CHEMICAL-SPECIFIC CRITERIA APPLICATION CONDITIONS			
Criteria	**Sub-Criteria**	**Point of Application**	**Stream Flow**
Aquatic Life	Acute	No Diffuser – End-of-pipe	Not applicable
		Diffuser – Edge of the ZID Receiving Water	7Q10
	Chronic	Edge of Mixing Zone Receiving Water	7Q10
Human Health	Fish Consumption	Edge of Mixing Zone Receiving Water	Harmonic Mean
	Domestic Water Supply	Point of Withdrawal Intake Water	Carcinogen – Harmonic Mean
			Non-Carcinogen – 7Q10

The following figure illustrates the application points for these criteria.



C_A – Acute criteria for aquatic life

C_C – Chronic criteria for aquatic life

C_{HHDWS} - Human Health criteria domestic water supply

C_{HHFC} - Human Health criteria fish consumption

C_T – End-of-pipe effluent limit

C_U – Background pollutant concentration

Q_T – Total Effluent Flow

Q_U – Upstream Flow

1.2.2.1.1. Mass-balance Equation

The chemical-specific water quality limitations are calculated using the following mass-balance equation:

$$(C_U)(Q_U)+(C_T)(Q_T)=(C_D)(Q_U+Q_T)$$

Where:

C_D = pollutant concentration downstream (water quality criteria)
C_T = End-of-pipe effluent limit
C_U = pollutant concentration upstream (stream background condition)
Q_T = wastewater flow
Q_U = receiving stream flow upstream

Solving the equation for CT first requires rearranging the equation as

$$C_T = \frac{[(C_D)(Q_T+Q_U)-(C_U)(Q_U)]}{Q_T}$$

In the event that the applicable Q_U is zero, $C_T = C_D$.

1.2.2.1.2. Mixing Zones and Zones of Initial Dilution

A mixing zone (MZ) is an area where effluent discharge undergoes dilution and is extended to cover the secondary mixing in the ambient waterbody. It is also an allocated impact zone where water quality criteria can be exceeded as long as acutely toxic conditions are prevented. 401 KAR 10:029, Section 4 sets forth the requirements for the granting of mixing zones, zones of initial dilution (ZIDs) and the application point of the aquatic life and human health criteria found in Kentucky's Water Quality Standards at 401 KAR 10:031. 401 KAR 10:029, Section 4(1) establishes requirements for the granting of an MZ, and Section 4(2) establishes the points of application for the aquatic life and human health criteria and the requirements and restrictions associated with a ZID.

When granting an MZ, DOW must assign definable geometric limits including the linear distance from the point of discharge, the surface area involved, and the volume of the receiving water, and shall take into account other nearby MZs. For streams and rivers, the assigned MZ shall not exceed 1/3 of the width of the waterbody nor 1/2 of the waterbody's cross-sectional area in any spatial direction. For lakes and reservoirs, the assigned MZ shall not exceed 1/10 of width of the waterbody in any spatial direction. The MZ shall not adversely affect the designated uses of the receiving stream nor adversely affect an established community of aquatic organisms. The location of an MZ shall not interfere with fish spawning or nursery areas, fish migration routes, public water supply intakes, or bath areas; preclude the free passage of fish or aquatic life, or jeopardize the continued existence of endangered or threatened aquatic species or result in the destruction or

adverse modification of their critical habitat. Unless assigned by the Cabinet on or before September 8, 2004, there shall be no MZ for bioaccumulative chemicals of concern. Existing MZs assigned by the Cabinet for bioaccumulative chemicals of concern shall expire no later than September 8, 2014. The dilution afforded by an MZ is not allowed unless the applicant requests an MZ and DOW assigns the geometric limits.

A ZID is a regularly-shaped area surrounding the discharge structure that encompasses the regions of high pollutant concentrations under design conditions. ZIDs are restricted to facilities with a submerged high-rate multi-port outfall structure (diffuser). Within the ZID, acutely-toxic concentrations may exist; as such, the acute criteria must be met at the edge of the defined ZID. When determining the size of the ZID, DOW evaluates three cases, the most restrictive of which is used to establish the dimensions of the ZID and the allowable dilutions. The three cases that are evaluated are as follows: (1) within 10% of the distance from the edge of the outfall to the edge of the assigned mixing zone in any spatial direction; (2) within 50 times the square root of the cross-sectional area of a discharge port in any spatial direction; and (3) horizontally within 5 times the natural water depth that prevails under mixing zone design conditions, and exists before the installation of a discharge outlet. Unless assigned on or before December 8, 1999, a ZID for a pollutant shall not be allowed in an Exceptional Water. Like MZs, the dilution afforded by a ZID is not allowed unless the applicant requests a ZID and DOW assigns the geometric limits.

1.2.2.1.2.1. Mixing Zone

When an MZ is granted, the available upstream flow Q_U is modified by the MZ factor (MZF). The MZF represents the maximum proportion of the flow allowed to be used for the MZ. The mass-balance equation becomes

$$C_T = \frac{[C_D(Q_T + (MZF)(Q_U)) - C_U(MZF)(Q_U)]}{Q_T}$$

Assuming that the depth is much smaller than width and that the flow is therefore width-dependent, the MZF cannot exceed 0.333 for most streams and rivers. For larger rivers, the cross-sectional limitation of 0.5 is allowed, but 0.333 is generally used to be conservative. Because of the low-flow regime present in lake systems, 0.1 is the maximum MZF for lakes. The MZ dilution (MZD) is then defined as product of the MZF and the ratio of the downstream flow to the upstream flow, or

$$MZD = \frac{(MZF)(Q_U) + Q_T}{Q_T}$$

Substituting MZD into the prior equation yields

$$C_T = \left[MZD\left(C_D - C_U\left(\frac{(MZF)Q_U}{Q_T + (MZF)Q_U} \right) \right) \right]$$

In the case where the receiving water flow condition is many times greater than the discharge flow, $\frac{(MZF)Q_U}{(Q_T + (MZF)Q_U)}$ approaches 1, which is a conservative assumption since it results in smaller values of C_T. The mass-balance equation can be approximated as

$$C_T = (C_D - C_U)MZD$$

1.2.2.1.2.2. Zone of Initial Dilution

A ZID is granted when a high rate multi-port submerged diffuser is installed on the effluent pipe. In such cases the ZID dilution (ZIDD) is defined as the ratio of the downstream flow to the upstream flow, or

$$ZIDD = \frac{(Q_T + Q_U)}{Q_T}$$

And the mass-balance equation is expressed as

$$C_T = \left[ZIDD\left(C_D - C_U\left(\frac{Q_U}{Q_T + Q_U} \right) \right) \right]$$

In cases where the receiving water flow condition is many times greater than the discharge flow, $\frac{Q_U}{(Q_T + Q_U)}$ approaches 1, which is a conservative assumption since it results in smaller values of CT. The mass-balance equation can be approximated as

$$C_T = (C_D - C_U)\,ZIDD$$

1.2.2.1.3. Aquatic Life Criteria

Effluent discharge limitations for a particular constituent for the aquatic live criteria are based on the instream pollutant concentration limits for both acute conditions (C_A) and chronic conditions (C_C) and an associated ZIDD and/or MZD. The numerical values of the effluent discharge limits for a particular constituent are determined using the following equations. The 7Q10 low-flow condition of the receiving stream is used in place of Q_U when calculating these criteria.

1.2.2.1.3.1. Acute Aquatic Life Criteria

The acute aquatic life criterion (C_A) is applied at either the edge of the ZID or at the end of the discharge pipe. When a ZID is granted, the mass-balance equation is written as

$$C_T = (LC_1 - C_U)(ZIDD)$$

Where LC_1 is the concentration of toxic substance or mixture of toxic substances which is lethal (or immobilizing, if appropriate) to one (1) percent of the organisms tested in a toxicity test during a specified exposure period. The LC_{50} is the concentration of toxic substance or mixture of toxic substances which is lethal (or immobilizing, if appropriate) to fifty (50) percent of the organisms tested in a toxicity test during a specified exposure period. Due to the difficulty in deriving an LC1, the equivalent value of the LC_{50}, i.e. 1/3 LC_{50}, is used instead. The equation can thus be rewritten as

$$C_T = (0.333LC_{50} - C_U)(ZIDD)$$

The acute criteria listed in Table 1 in 401 KAR 10:031, Section 4 is the LC_{50} values for those specific pollutants therefore the equation is ultimately written as

$$C_T = (C_A - C_U)(ZIDD)$$

In the case where a ZID has not been granted, the equation becomes:

$$C_T = (C_A - C_U)$$

1.2.2.1.3.2. Chronic Aquatic Life Criteria

As previously stated, the chronic criterion (C_C) is applied at the end of the discharge pipe or at the edge of the assigned regulatory MZ. When an MZ is granted, the mass-balance equation for non-bioaccumulative or non-persistent chemicals is

$$C_T = (0.1LC_{50} - C_U)(MZD)$$

And for bioaccumulative or persistent chemicals is

$$C_T = (0.01LC_{50} - C_U)(MZD)$$

The chronic criteria listed in Table 1 in 401 KAR 10:031, Section 4 is the $0.1LC_{50}$ and $0.01LC_{50}$ values for those specific pollutants therefore the mass-balance equation is ultimately written as

$$C_T = (C_C - C_U)(MZD)$$

In the case where a MZ has not been granted, the equation becomes

$$C_T = (C_C - C_U)$$

Note: As previously stated in Section 1.2.2.1.2, unless granted prior to September 8, 2004, no new MZs shall be granted for bioaccumulative chemicals and any existing MZ shall expire no later than September 8, 2014. The following table lists those chemicals which are currently defined under 401 KAR 10:029, Section 4(1)(h)2b as bioaccumulative chemicals.

BIOACCUMULATIVE CHEMICALS OF CONCERN		
alpha-Hexachlorocyclohexane	Hexachlorobenzene	Pentachlorobenzene
beta-Hexachlorocyclohexane	Hexachlorobutadiene	Photomirex
Chlordane	Hexachlorocyclohexane	Toxaphene
DDD	Lindane	1,2,3,4-Tetrachlorobenzene
DDE	Mercury	1,2,4,6-Tetrachlorobenzene
DDT	Mirex	2,3,7,8-TCDD (Dioxin)
delta-Hexachlorocyclohexane	Octachlorostyrene	
Dieldrin	PCBs	

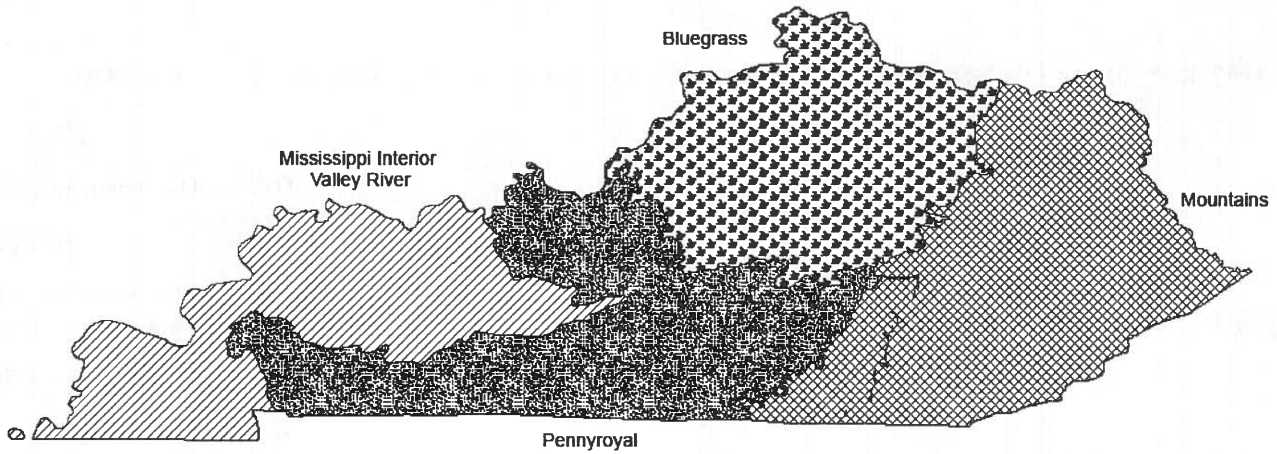
1.2.2.1.3.3. Narrative Criteria

40 CFR 131.11 requires that states must identify water bodies where toxic pollutants may be adversely affecting water quality or the attainment of such designated use, or where the level of such toxic pollutants are at a level to warrant concern and must adopt criteria for such toxic pollutants applicable to the water body sufficient to protect the designated use. In establishing narrative criteria, 40 CFR 131.11(b)(2) specifies that criteria should be based on biomonitoring methods where numerical criteria cannot be established or to supplement numerical criteria. Kentucky has developed criteria to protect aquatic life in 401 KAR 10:031 Section 4, including narrative criteria related to total dissolved solids or specific conductance, total suspended solids, settleable solids, and flow.

Aquatic community integrity may be assessed by monitoring biological indicators, including benthic macroinvertebrates (benthics), fish, and related habitats. DOW utilizes the Kentucky MBI and KIBI developed by DOW to assess benthic and fish communities, respectively, in conjunction with the RBP habitat field methods developed by USEPA to evaluate stream conditions for meeting the designated uses of warm and cold water aquatic life, including the narrative criteria, as cited in 401 KAR 10:026, Section 3.

The Kentucky MBI and KIBI include metric scores based on bioregions across the state for benthics and fish, respectively. Numeric metric scores relate to five (5) narrative categories that determine whether the stream meets its designated use for aquatic life. The categories are Excellent, Good, Fair, Poor, and Very Poor. Categories Excellent and Good indicate full support of the designated use; Fair, Poor, and Very Poor indicate non-support of the designated use.

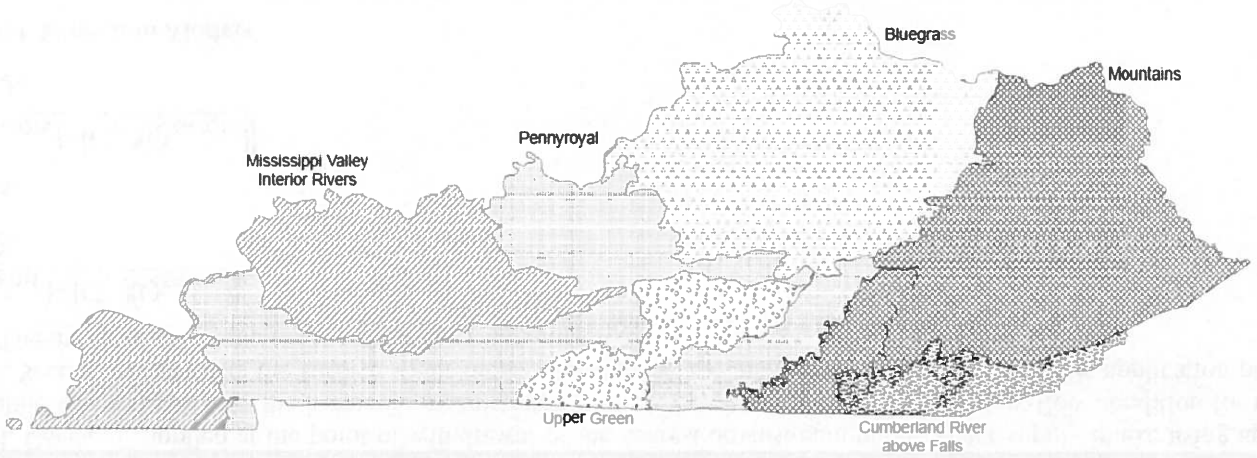
The four (4) bioregions for MBI metrics are the Bluegrass, the Mountains, the Pennyroyal, and the Mississippi Valley and Interior Rivers, as illustrated in the following figure. Associated MBI ranges for each category based on stream size are listed in the following table.



Stream Size	MBI Category	Bluegrass	Mountains	Pennyroyal	Mississippi Valley – Interior River
Headwater (< 5 mi² drainage)	Excellent	≥ 58	≥ 83	≥ 72	≥ 63
	Good	51 - 57	72 - 82	65 - 71	56 - 62
	Fair	39 - 50	48 - 71	43 - 64	35 - 55
	Poor	19 - 38	24 - 47	22 - 42	19 - 34

	Very Poor	0 - 18	0 - 23	0 - 21	0 - 18
Wadeable ($\geq$ 5 mi^2 drainage)	Excellent	$\geq$ 79	$\geq$ 82	$\geq$ 81	$\geq$ 58
	Good	61 - 79	75 - 81	72 - 80	48 - 57
	Fair	41 - 60	50 - 74	49 - 71	24 - 47
	Poor	21 - 40	25 - 49	25 - 48	13 - 23
	Very Poor	0 - 20	0 - 24	0 - 24	0 - 12

The six (6) bioregions for the KIBI metrics for fish are Bluegrass, Mountains, Pennyroyal, Mississippi Valley and Interior Rivers, Cumberland River above the Falls, and the Green River Valley, as illustrated in the following figure. Associated KIBI ranges for each category are listed in the following table.



KIBI Category	Bluegrass	Mountains	Pennyroyal	Mississippi Valley – Interior River	Cumberland River above Falls	Upper Green
Excellent	$\geq$ 52	$\geq$ 71	$\geq$ 67	$\geq$ 67	$\geq$ 56	$\geq$ 86
Good	47 - 51	59 - 70	53 - 66	48 - 66	47 - 55	76 - 85
Fair	31 - 46	39 - 58	35 - 52	32 - 47	31 - 46	51 - 75
Poor	16 - 30	19 - 38	17 - 34	16 - 31	16 - 30	26 - 50
Very Poor	0 - 15	0 - 18	0 - 16	0 - 15	0 - 15	0 - 25

1.2.2.1.4. Human Health Criteria

For the purposes of protecting human health there are two criteria that must be satisfied, one for fish consumption (C_{HHFC}) and one for domestic water supply (C_{HHDWS}). Either the 7Q10 low-flow condition or harmonic mean stream flow of the receiving water or the source water of the nearest downstream public water supply is used in place of QU when calculating effluent limits based on these criteria, as stated below.

1.2.2.1.4.1. Fish Consumption Criteria

Like C_C, C_{HHFC} is applied at the edge of the assigned regulatory MZ. However, the harmonic mean flow of the receiving water is used when calculating effluent limits based on these criteria. When an MZ is granted, the mass-balance equation is written as

$$C_T = (C_{HHFC} - C_U)(MZD)$$

In the case where an MZ has not been granted, the equation becomes

$$C_T = (C_{HHFC} - C_U)$$

1.2.2.1.4.2. Domestic Water Supply Criteria

The domestic water supply criteria (C_{HHDWS}) may apply to a pollutant that is categorized as a carcinogen or a non-carcinogen, based on a one-in-a-million or 10^6 cancer risk-protection level. C_{HHDWS} is applied at the point of withdrawal of the nearest downstream public water supply intake using appropriate flow regime of the source water for the public water supply, i.e. the harmonic mean stream flow for carcinogens and the 7Q10 low-flow condition for non-carcinogens. Table B found in 401 KAR 10:026, Section 5(2)(b) lists the surface water intakes for domestic water supply use. Because of this application point, C_{HHDWS} is calculated assuming a complete mix. The mass-balance equation is written for a carcinogen as

$$C_T = \frac{[(C_{HHDWS})(Q_T + Q_{SWHM}) - (C_U)(Q_{SWHM})]}{Q_T}$$

And for a non-carcinogen as

$$C_T = \frac{[(C_{HHDWS})(Q_T + Q_{SW7Q10}) - (C_U)(Q_{SW7Q10})]}{Q_T}$$

1.2.2.1.5. Waste Load Allocation Models

DOW uses the models QUAL2K, CORMIX and SSTWAM models to assist in the development the WLA. The QUAL2K model develops effluent limitations for biochemically degradable wastewaters from residential types of effluents. CORMIX is a mixing zone analysis model used to determine the size and effect of a mixing zone. SSTWAM is a WLA model that generates effluent limits for toxic pollutants which have water quality criteria. These models are detailed below.

1.2.2.1.5.1. CORMIX

CORMIX is an EPA-supported simulation and decision support system developed by MixZon for environmental impact assessment of mixing zones resulting from continuous point-source discharges. The system emphasizes the role of boundary interaction to predict mixing behavior and plume geometry.

The CORMIX methodology contains systems to model and design single-port, multiport diffuser discharges and surface discharge sources. Effluents considered may be conservative, non-conservative, heated, dense brine discharges or contain suspended sediments. Advanced information systems provide documented water quality modeling, NPDES regulatory decision support, visualization of regulatory mixing zones, and tools for outfall specification.

DOW primarily utilizes this model to determine plume geometry, i.e., allowable MZ and ZID, for multi-port high-rate submerged diffusers with conservative discharges.

1.2.2.1.5.2. River and Stream Water Quality Model

The River and Stream Water Quality Model (QUAL2K) is a non-uniform, steady-state mass-balance model that assumes mixing vertically and laterally. The model has the ability to accept many combinations of point or nonpoint sources or withdrawals.

QUAL2K was developed by EPA to modernize QUAL2E, developed by Brown and Barnwell in 1987.

DOW primarily uses the model to develop effluent limitations for biochemically-degradable wastewaters, including BOD, pH, and DO (DO).

1.2.2.1.5.3. Steady-State Toxics Wasteload Allocation Model

The Steady-State Toxics Wasteload Allocation Model (SSTWAM) models is a uniform, steady-state mass-balance model that models water quality using the formulas developed above.

SSTWAM was originally developed by DOW in the 1990s as a steady-state mass-balance workbook in Microsoft Excel. The format was updated in 2010 to a Microsoft Access 2007 database that allows more flexibility to update and distribute the application when new water quality standards are promulgated, when there is a new interpretation of an existing standard, or when state flow data is updated.

1.2.2.2. Whole Effluent Toxicity Criteria

In addition to chemical-specific criteria, 401 KAR 10:031 contain whole effluent toxicity (WET) criteria that necessitate the evaluation of complete effluents. Like the chemical-specific aquatic life criteria, the WET criterion is divided into two categories – acute and chronic. However, WET criteria are not measured in pollutant concentrations but rather in toxicity units (TUs). Toxicity Units are defined mathematically as 100 defined by a specific toxic effect. Acute toxicity is expressed in units of TU_A and is defined as $100/LC_{50}$ (in percent). Chronic toxicity is expressed as TU_C and is defined as $100/IC_{25}$. The IC_{25} is concentration at which a twenty-five (25) percent reduction is shown in reproduction or growth in test organisms.

Additionally, a relationship between TU_A and TU_C must be defined. This relationship is known as the acute to chronic ratio and is defined as the ratio of acute toxicity, expressed as an LC_{50}, of an effluent to its chronic toxicity. It is used as a factor to estimate chronic toxicity from acute toxicity data. DOW has defined two factors, one for bioaccumulative or persistent and one for non-accumulative or non-persistent effluents. For bioaccumulative or persistent constituents,

$TUC = 0.01\ TU_A$

For non-bioaccumulative or non-persistent constituents,

$TU_C = 0.1\ TU_C$

1.2.2.2.1. Acute Whole Effluent Criteria

Like C_A, C_{AWET} is applied at either the edge of the ZID or at the end of the discharge pipe. Pursuant to 401 KAR 10:029, Section 4(2) and 401 KAR 10:031, Section 4(1)(j), acute toxicity shall not exist within an assigned mixing zone or in the discharge itself unless a ZID has been assigned. Or, more simply stated, C_{AWET} shall not exceed $1.00TU_A$ unless a ZID has been assigned, in which case C_{AWET} shall not exceed $0.3\ TU_A$. The mass-balance equation is written with no ZID as

$$C_T = C_{AWET} = 1.00\,TU_A$$

And with a ZID assigned as

$$C_T = (0.3C_{AWET} - C_U)(ZIDD)$$

Or

$$C_T = (0.3TU_A - C_U)(ZIDD)$$

1.2.2.2.2. Chronic Whole Effluent Criteria

Pursuant to 401 KAR 10:031, Section 4(j), the allowable instream concentration of toxic substances or whole effluents containing toxic substances shall not exceed a TU_C of 1.00, utilizing the IC_{25}. Like C_C, C_{CWET} is applied at the edge of the assigned regulatory MZ. When an MZ is granted the mass-balance equation is written as

$$C_T = (C_{CWET} - C_U)(MZD)$$

The equation can be rewritten substituting 1.00 TU_C for C_{CWET} as

$$C_T = (1.00\,TU_C - C_U)(MZD)$$

In order to compare C_{CWET} to C_{AWET}, the equation can be rewritten substituting the acute-to-chronic ratio and C_{AWET} for C_{CWET} for a non-bioaccumulative or non-persistent pollutant as

$$C_T = (0.1\,C_{AWET} - C_U)(MZD)$$

And for a bioaccumulative or persistent pollutant as

$$C_T = (0.01\,C_{AWET} - C_U)(MZD)$$

In the case where an MZ has not been granted the equation becomes

$$C_T = (C_{CWET} - C_U)$$

If no background data is available for the specific pollutant then C_U is assumed to be zero (0) and C_{CWET} is applied as an end-of-pipe effluent limit.

1.2.2.3. Exception to Criteria for Individual Dischargers

Kentucky WQS at 401 KAR 10:031, Section 11 enables DOW to grant an exception to criteria through the KPDES permit to an individual discharger based on a demonstration that KPDES permit compliance with existing instream criteria cannot be attained because of one or more of the following conditions:

(1) naturally occurring pollutant concentrations prevent attainment;
(2) natural, ephemeral, intermittent, or low flow conditions or water levels prevent attainment;

(3) non remediable human induced conditions or sources of pollution prevent attainment;
(4) hydrologic modifications preclude the attainment of the use;
(5) non-water quality related natural physical features of the surface water preclude attainment; or
(6) Controls more stringent than those required by Sections 301(b) and 306 of the Clean Water Act, 33 U.S.C. 1311(b) and 1316, would result in substantial and widespread economic and social impact as determined by the guidelines in Interim Economic Guidance for Water Quality Standards Workbook, EPA, March 1995.

1.2.3. Antidegradation

The CWA requires each State to develop an Antidegradation Policy and associated implementation procedures for the protection and maintenance of a waterbody's existing water quality. Kentucky's Antidegradation Policy is found in 401 KAR 10:029, Section 1. The antidegradation policy implementation methodology is contained in 401 KAR 10:030.

1.2.3.1. Antidegradation Policy

The purpose of 401 KAR 10:026 through 401 KAR 10:031 is to safeguard the surface waters of the commonwealth for their designated uses, to prevent the creation of new pollution of these waters, and to abate existing pollution.

Where the quality of surface waters exceeds that necessary to support propagation of fish, shellfish, wildlife and recreation in and on the water, that quality shall be maintained and protected unless the Cabinet finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the Cabinet's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located.

For point source discharges, water quality shall be maintained and protected in these waters according to the procedures specified in 401 KAR 10:030, Section 1(2)(b) or (3)(b).

In allowing degradation or lower water quality, the Cabinet shall assure water quality adequate to protect existing uses fully.

The Cabinet shall assure that there shall be achieved the highest statutory and regulatory requirements for waste treatment by all new and existing point sources and that nonpoint sources of pollutants be controlled by application of all cost effective and reasonable best management practices.

Water quality shall be maintained and protected in a water categorized as an outstanding national resource water according to the procedures specified in 401 KAR 10:030, Section 1(1)(b).

Water quality shall be maintained and protected in those waters designated as outstanding state resource waters according to the procedures specified in 401 KAR 10:031, Section 8.

If potential water quality impairment associated with a thermal discharge is involved, a successful demonstration conducted under Section 316 of the Clean Water Act, 33 U.S.C. 1326, shall be in compliance with this section.

1.2.3.2. Implementation Methodology

All surface waters of the commonwealth have been assigned to an antidegradation category based on specific criteria. These categories are: Outstanding National Resource Water (ONRW), Exceptional Water (EW), Impaired Water (IW) and High Quality Water (HQW).

1.2.3.2.1. Outstanding National Resource Water

An ONRW is surface water that at minimum meets the requirements to be designated an Outstanding State Resource Water (OSRW) pursuant to 401 KAR 10:031, Section 8 and demonstrates national ecological or recreational significance. Kentucky has eight (8) such categorized as ONRWs. A list of these waters can be found in 401 KAR 10:030, Section 1(1) Table 1. The implementation methodology for this category of waters is as follows:

(1) The water quality shall be maintained and protected;
(2) New or expanded discharges that result in permanent or long-term changes in water quality are prohibited; and
(3) Temporary or short term changes in water quality may be approved if the changes do not have a demonstrable impact on the ability of the water to support its designated uses.

1.2.3.2.2. Exceptional Water

The Cabinet has categorized over 250 surface waters as EW. To be categorized as EW, a surface water must meet one of the following criteria:

(1) Designated as a Kentucky Wild River and is not categorized as an ONRW;
(2) Designated as an outstanding state resource water as established in 401 KAR 10:031, Section 8(1)(a)1, 2, and 3 and Section 8(1)(b);
(3) Contains a fish community that is rated "excellent" by the use of the Index of Biotic Integrity included in Development and Application of the Kentucky Index of Biotic Integrity (KIBI), 2003;
(4) Contains a macroinvertebrate community that is rated "excellent" by the Macroinvertebrate Bioassessment Index included in "The Kentucky Macroinvertebrate Bioassessment Index," 2003; or
(5) Included in the Cabinet's reference reach network.

The implementation methodology for new or expanded discharges to an EW is the same as the implementation methodology for an HQW except where the surface water's stream use designation may require more stringent requirements or maintenance of current water quality.

1.2.3.2.3. Impaired Water

Surface waters that have been identified pursuant to 33 U.S.C. 1315(b) are categorized as impaired waters. Impaired waters are those waters which have been assessed by the Cabinet as not fully supporting any applicable designated use unless the designated is OSRW or the impairment is for fish consumption due to mercury contamination. Surface waters categorized as impaired are listed in DOW's biannual *Integrated Report to Congress on the Condition of Water Resources in Kentucky*. The implementation methodology for new or expanded discharges to this category of waters is as follows:

(1) All existing uses shall be protected and the level of water quality necessary to protect those existing uses shall be assured in impaired water; and
(2) The process to allow a discharge into an impaired water and to assure protection of the water shall be regulated by the requirements in the Kentucky Pollution Discharge Elimination System Program, 401 KAR 5:050-5:080.

1.2.3.2.4. High Quality Water

The largest of all of the antidegradation categories is the High Quality Water (HQW) group. It consists of all surface waters that have not been categorized as an ONRW, EW or IW; it is therefore the default category for any surface water that has not been assessed by the Cabinet. The implementation methodology for new or expanded discharges to HQWs consists of the following requirements:

(1) Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected;

(2) An application for a KPDES permit for a new or expanded discharge shall contain information demonstrating that the lowering of water quality is necessary to accommodate important economic or social development in the area in which the water is located, utilizing Form SDAA;
(3) A permit applicant who has failed to demonstrate the necessity and social or economic development importance for lowering water quality shall not receive a permit unless (a) The applicant submits a revised SDAA that demonstrates the necessity for lowering water quality, or (b) The applicant demonstrates that the discharge shall not consume more than ten (10) percent of the available assimilative capacity of the receiving stream outside of a designated mixing zone or zone of initial dilution for each new or increased pollutant in the discharge;
(4) A permit applicant who demonstrates the necessity and social or economic development importance for lowering water quality shall meet the requirements of the KPDES program, 401 KAR 5:050 through 5:080; and
(5) The Cabinet's determination shall be documented in the permit Fact Sheet and included in the administrative record for the permit or action.

1.2.3.2.5. Socioeconomic Demonstration and Alternates Analysis

1.2.3.2.5.1. Socioeconomic Demonstration

The socioeconomic demonstration portion of this requirement shall consider the following factors:

(1) The boundaries of the affected community;
(2) The potential effect on employment, including a comparison of local unemployment rates and state and national unemployment rates;
(3) The potential effect on median household income levels, including a comparison of the present median household income level, projected median household income level, and number of households affected in the defined community;
(4)) The potential effect on tax revenues, including current tax revenues in the affected community compared to projected increase in tax revenues generated by the permitted project;
(5) The potential effect of the facility on the environment and public health; and
(6) Other potential economic or social effect to the community that the applicant includes in the application.

1.2.3.2.5.2. Alternatives Analysis

The alternatives analysis shall consider the following factors:

(1) Pollution prevention measures, such as changes in plant processes, source reductions, or substitution with less toxic substances;
(2) The use of best management practices to minimize impacts;
(3) Recycle or reuse of wastewater, waste by-products, or production materials and fluids;
(4) Application of water conservation methods;
(5) Alternative or enhanced treatment technology;
(6) Improved operation and maintenance of existing treatment systems;
(7) Seasonal or controlled discharge options;
(8) Land application or infiltration to capture pollutants and reduce surface runoff, on-site treatment, or alternative discharge locations; and
(9) Discharge to other treatment facilities.

1.2.3.2.5.3. Activities Not Subject to Antidegradation Implementation

The following activities are not subject to the EW or HQW antidegradation implementation procedures include:

(1) The renewal of a KPDES permit that does not authorize pollutant loading to the receiving stream in excess of that previously authorized;
(2) An increase in pollutant loading within the limits previously approved by the KPDES permit; or
(3) A new or expanded discharge that the applicant demonstrates shall not consume more than ten (10) percent of the available assimilative capacity of the receiving stream outside of a designated mixing zone or zone of initial dilution for each new or increased pollutant in the discharge.

1.2.3.2.5.4. Activities That Constitute Compliance with Antidegradation Implementation

The approval of a POTW's regional facility plan pursuant to 401 KAR 5:006 shall constitute compliance with the alternatives analysis and socioeconomic demonstration for a regional facility.

1.3. Effluent Limitations and Monitoring Requirements

Having completed an evaluation of the applicable technology-based effluent requirements and applicable water quality based effluent requirements, the permit writer determines (1) the pollutants that are to be controlled by chemical-specific numeric effluent limits, (2) if WET testing is appropriate, (3) the type and frequency of self monitoring, and (4) for permit renewals if anti-backsliding applies.

1.3.1.1. Chemical-Specific Numeric Effluent Limitations

The imposition of chemical-specific numeric effluent limitations is necessary when reasonable potential has been demonstrated. Pursuant to 401 KAR 5:065, Section 2(4) [40 CFR 122.44] the permit must contain effluent limitations that satisfy both technology and water quality based concerns. To comply with this requirement a comparison of the calculated technology-based effluent limitations to the calculated water quality based effluent limitations is required. When performing such a comparison there must be consistency in the units and the chemical species. Direct comparisons of different speciations of a pollutant are irrelevant and produce illogical results; therefore e.g. calculated technology-based effluent requirements for total chromium must be compared to the calculated water quality based effluents for total chromium not trivalent chromium.

In general technology-based effluent limitations are expressed in terms of mass, i.e. lbs/day, whereas most water quality based effluent limitations are expressed in terms of concentration, i.e. mg/l. The permit writer must convert from lbs/day to mg/l or mg/l to lbs/day using the following formulas in order to perform a comparison of the calculated effluent limitations:

$$\text{Load} = \text{Flow} \times \text{Concentration} \times 8.34, \text{ or}$$

$$\text{Concentration} = \frac{\text{Load}}{\text{Flow} \times 8.34}$$

8.34 is a conversion factor with units of l·lbs/MG·mg

Where load is expressed in lbs/day, flow is expressed in MGD, and concentration is expressed in mg/l.

The final effluent limits for a selected pollutant of concern shall be expressed in appropriate units, i.e. mass, concentration or a combination of the two. 401 KAR 5:065, Section 2(4) [40 CFR 122.44 (f)] requires all pollutants limited in permits to be expressed in terms of mass except for pollutants which cannot appropriately be expressed by mass or the applicable requirements are more appropriately expressed in terms of concentrations. Pollutants limited in terms of mass additionally may be limited in terms of other units of measurement, and the permit shall require the permittee to comply with both limitations.

1.3.2. WET Testing Requirements

DOW imposes WET testing on the following types of dischargers: (1) industrial dischargers rated as a major using EPA's major rating system; (2) industrial dischargers with complex wastestreams which DOW has determined to have a reasonable potential; (3) POTWs with a design capacity equal to or greater than 1.0 MGD; and (4) POTWs having an approved Pretreatment Program. Depending on discharge-specific and receiving stream-specific characteristics; DOW applies either acute or chronic WET testing. In some instances DOW may include both types of WET testing on the permit to address separate outfalls or to address changing conditions.

WET testing involves the exposure of two representative organisms to an effluent for a specific period of time to determine either lethality or inhibition. The test organisms used in Kentucky are *Pimephales promelas* (fathead minnow) and *Ceriodaphnia dubia* (water flea). Serial dilutions of the effluent are used to determine the point at which toxicity occurs. Each test consists of a control and a series of five dilutions of the effluent, consisting of the permit limit (expressed as percent effluent) and two each above and two below. The two above the permit limit shall include 100% and the midpoint between 100% and the limit. The two below the permit limit shall be at spaced at 50% and 25% of the permit limit. However if the permit limit is 100%, the dilutions shall be at 80%, 60%, 40% and 20%. Additional provisions specific to both tests include:

(1) If after a minimum of six consecutive passing tests, the more sensitive organism can be determined, the permittee may request that subsequent tests be performed using the more sensitive organism only;
(2) Should routine testing result indicate a noncompliance with the effluent limit for either organism, the permittee is required to conduct a second round of testing with both organisms within a specified period;
(3) Should the second round of testing demonstrate a noncompliance with the permit limit, the permittee shall complete four additional rounds of testing (accelerated testing) within 60 days of the failure of the second round test;
(4) If the results of any of the six rounds of testing show a significant noncompliance with the WET limit, i.e. $\geq$ 1.2 times the WET limit or if any four of the six tests indicate a noncompliance with the WET limit then a Toxicity Reduction Evaluation (TRE) will be required; and
(5) Should toxicity prove not to be persistent during the accelerated testing period, but reoccur within 12 months of the initial failure at a level $\geq$ 1.2 times the WET limit, and then TRE will be required.

1.3.2.1. Acute WET Testing Requirements

This test is a 48-hour static non-renewal toxicity test conducted on each of two grab samples collected over the period of discharge,(i.e., discrete sample #1 taken at commencement of discharge, sample #2 taken approximately 12 hours later, sooner if discharge is expected to cease). Should the permittee be required to conduct a second round of testing as a result of a noncompliance with the permit limit sampling for the second round testing shall be initiated within 10 days of completing the failed test.

1.3.2.2. Chronic WET Testing Requirements

This test is a short-term (7-day) static renewal toxicity test performed on a series of three (3) 24-hour composite samples collected at a frequency of one every other day. Each sample shall be collected using a refrigerated automatic sampler and shall consist of not less than 96 discrete equal volume-time proportional aliquots of effluent.

1.3.2.3. Toxicity Reduction Evaluations

If the initial and subsequent rounds of testing indicate that toxicity is persistent, the permittee shall develop and submit to DOW for review and approval a toxicity reduction evaluation (TRE) plan. The plan shall be developed in accordance with the latest EPA and DOW guidance and submitted within 30 days of determining that a TRE is necessary. Components of the TRE include:

(1) Toxic Identification Evaluation (TIE) procedures;
(2) Treatability studies;
(3) Evaluations of chemical usage including changes, operational and process procedures, housekeeping, maintenance and raw materials; and
(4) An implementation schedule of not less than 6 months or greater than 24 months including quarterly progress reports.

Upon completion of the TRE, a final report detailing the TRE findings and actions taken or to be taken to prevent the reoccurrence of toxicity shall be submitted to DOW.

1.3.3. Monitoring, Analytical and Reporting Requirements

All permits are required by 401 KAR 5:070, Section 3 [40 CFR 122.48] and 401 KAR 5:065, Section 2(4) [40 CFR 122.44(i)] to include monitoring and reporting requirements designed to measure compliance with permit conditions.

1.3.3.1. Monitoring Requirements

The permit must include monitoring requirements for each pollutant limited in the permit and the volume of effluent discharged from each outfall. When establishing monitoring requirements, the permit writer must determine the type, intervals, and frequency of monitoring. The monitoring program is required to be sufficient to yield data that is representative of the monitored activity. In regards to the type of monitoring required, the permit writer must decide if effluent monitoring alone is sufficient or if other monitoring is required. Examples of other types of monitoring and when they are required include:

(1) Influent monitoring when permit conditions are written in the form of a pollutant reduction;
(2) Source water monitoring when permit limits are expressed in the form of net limits;
(3) Internal monitoring when it is infeasible or impractical to monitor at the outfall, i.e. when outfall may be flooded or when it is necessary to demonstrate compliance with a technology-based effluent limit when wastestreams are combined for treatment and discharge; and
(4) Ambient monitoring when permit contains conditions that are measured by changes in receiving water conditions, i.e. hydrographically controlled releases, etc.

In determining the frequency of monitoring, the permit writer considers: size and design of the facility, type of treatment, location of discharge, frequency of discharge (batch, continuous), compliance history, nature of pollutants, number of monthly samples used in developing permit limit, and cost. The frequency of sampling must be of sufficient regularity to provide adequate data to evaluate compliance with the permit limits.

In addition to frequency, the permit writer must specify sample collection requirements. In determining the appropriate sample type, the permit writer considers pollutant characteristics, analytical method requirements, frequency of discharge (batch, continuous), etc. Types of samples most often required are: grab, composite, continuous, and instantaneous.

Grab samples are taken on a one-time basis without consideration of flow rate and time. This sample type is typically used for monitoring batch discharges. Grab samples are required for pollutants that are affected by changes in ambient conditions. Composite samples are made up of two or more discrete aliquots collected over a period of time. They provide a more representative measure of the discharge of pollutants over a given period of time and account for variability in pollutant

concentration and discharge rate. Composite samples are defined by the time interval between aliquots and volume of each aliquot and are typically used for pollutants with varying concentration over the period of discharge, i.e. BOD, TSS, chronic toxicity, etc. Continuous and instantaneous samples are used primarily for flow measurements.

1.3.3.2. Analytical Methods Requirements

Pursuant to 401 KAR 5:065, Section 2(4) [40 CFR 122.44(i)(1)(iv)], pollutant analysis shall be according to test procedures approved under 401 KAR 5:065, Section 2(8) [40 CFR 136] or other methods approved under 401 KAR 5:065, Section 2(9)-(10) [40 CFR subchapters N or O]. 401 KAR 5:065, Section 2(9) [Subchapter N] establishes the ELGs and 401 KAR 5:065, Section 2(10) [Subchapter O] establishes requirements for sewage sludge. When two or more approved analytical methods are available for a pollutant of concern, the method selected must be sufficiently sensitive to demonstrate compliance with the assigned effluent limitation. DOW includes a general statement requiring the permittee to utilize such methods. However, in cases where DOW has determined that a specific analytical method or method detection level (MDL) is required, language is included in the permit requiring that analytical method or MDL, e.g. EPA Method 200.8 for metals, and EPA Method 1631E for mercury.

1.3.3.3. Reporting Requirements

All permits must contain reporting requirements based upon the impact of the regulated activity. At a minimum, monitoring reports must be submitted annually. In accordance with 401 KAR 5:065, Section 2(4) [40 CFR 122.41(l)(4)], DOW requires analytical results to be reported on Discharge Monitoring Report (DMRs) form and submitted on a schedule commensurate with the frequency of monitoring, e.g. monthly monitoring equals monthly submission, etc.

1.3.3.4. Anti-backsliding Provision

Pursuant to 401 KAR 5:065, Section 2(4) [40 CFR 122.44(l)], when a permit is renewed or reissued, interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit.

In the case of effluent limitations established on the basis of ELG, a permit may not be renewed, reissued, or modified on the basis of effluent guidelines promulgated subsequent to the original issuance of such permit, to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit.

Exceptions to the anti-backsliding provision include:

(1) Material and substantial alterations or additions to the permitted facility occurred after permit issuance which justify the application of a less stringent effluent limitation;
(2) Information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance;
(3) Technical mistakes or mistaken interpretations of law were made in issuing the permit under Section 402(a)(1)(b) of the CWA;
(4) A less stringent effluent limitation is necessary because of events over which the permittee has no control and for which there is no reasonably available remedy;
(5) The permittee has received a permit modification under section 301(c), 301(g), 301(h), 301(i), 301(k), 301(n), or 316(a); or
(6) The permittee has installed the treatment facilities required to meet the effluent limitations in the previous permit and has properly operated and maintained the facilities but has nevertheless been unable to achieve the previous effluent limitations, in which case the limitations in the reviewed, reissued, or modified permit

may reflect the level of pollutant control actually achieved (but shall not be less stringent than required by effluent guidelines in effect at the time of permit renewal, reissuance, or modification).

In no event may a permit be renewed, reissued, or modified to contain an effluent limitation which is less stringent than required by effluent guidelines in effect at the time the permit is renewed, reissued, or modified. In no event may a permit to discharge into waters be renewed, issued, or modified to contain a less stringent effluent limitation if the implementation of such limitation would result in a violation of a water quality standard under Section 303 applicable to such waters.

1.4. Standard Conditions

All permits issued by DOW include language specific to 401 KAR 5:065, Section 2(1) [40 CFR 122.41], schedules of compliance, and reopener clauses.

1.4.1. Conditions Applicable to All Permits

All permits shall either expressly or by reference include the conditions established by 401 KAR 5:065, Section 2(1) [40 CFR 122.41]. These standard conditions or "boiler plate language" address (1) duty to comply with all conditions of the permit, (2) duty to reapply, (3) need to halt or reduce activity not a defense, (4) duty to mitigate, (5) proper operation and maintenance of treatment facilities and systems, (6) permit actions, (7) property rights, (8) duty to provide information, (9) inspection And Entry, (10) Monitoring And Records, (11) Signatory Requirements, (12) Reporting Requirements, (13) Bypasses, And (14) Upsets.

1.4.2. Schedules of Compliance

All permits contain a general compliance schedule requiring the permittee to be in compliance with all conditions of the permit upon the effective date of the permit. 401 KAR 5:070, Section 2 [40 CFR 122.47] authorizes specific schedules of compliance for the first issuance of a permit to a new source or new discharger when necessary to allow a reasonable opportunity to attain compliance with requirements issued or revised after commencement of construction and for water quality based effluent limitations for water quality standards adopted after July 1, 1977. Such schedules of compliance must include a final date for achieving compliance and interim compliance and reporting dates if the final compliance date is more than one year from the effective date of the permit.

1.4.3. Reopener Clause

In accordance with 401 KAR 5:070, Section 6(1) [40 CFR 122.62(a)(7)], a permit may be reopened for modification or revoked and reissued when required by the reopener conditions of 401 KAR 5:065, Section 2(4) [40 CFR 122.44(b)]. A permit shall be modified, or alternatively revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved in accordance with 401 KAR 5:050 through 5:080, if the effluent standard or limitation so issued or approved:

(1) Contains different conditions or is otherwise more stringent than any effluent limitation in the permit;
(2) Controls any pollutant not limited in the permit; or
(3)This permit may be reopened to implement the findings of a reasonable potential analysis performed by the DOW.

A permit shall be modified, or alternatively revoked and reissued, if DOW determines surface waters are aesthetically or otherwise degraded by substances that:

(1) Settle to form objectionable deposits;
(2) Float as debris, scum, oil, or other matter to form a nuisance;
(3) Produce objectionable color, odor, taste, or turbidity;
(4) Injure, are chronically or acutely toxic to or produce adverse physiological or behavioral responses in humans, animals, fish, and other aquatic life;
(5) Produce undesirable aquatic life or result in the dominance of nuisance species; or

(6) Cause fish flesh tainting.

1.5. Special Conditions

Special conditions are used to address unique situations, incorporate preventative requirements and incorporate other programmatic requirements. Typical special conditions are (1) best management practices, (2) pretreatment programs, (3) sludge disposal, (4) combined sewer overflows, and (5) incorporation by reference.

1.5.1. Pretreatment Program

The pretreatment regulations established in 401 KAR 5:057 [40 CFR 403, July 1, 2006] applies to the discharge of pollutants from non-domestic sources subject to pretreatment standards that are indirectly discharged into or transported by truck or rail to a POTW. Additionally this regulation applies to POTWs that receive wastewaters from sources subject to National Pretreatment Standards. The objectives of these regulations are to prevent the introduction of pollutants into a POTW that will interfere with the operation of the POTW, pass through the POTW, be incompatible with the POTW, or interfere with the use or disposal of the POTW sludge.

1.5.1.1. National Pretreatment Standards – Prohibited Discharges

401 KAR 5:057, Section 3 [40 CFR 403.5, July 1, 2006] establishes general and specific prohibitions of discharges of pollutants to a POTW that may interfere or pass through without treatment. This section also provides users criteria for demonstrating an affirmative defense against an alleged violation of the general prohibitions.

1.5.1.1.1. General Prohibitions

No user is to introduce to a POTW any pollutant or pollutants that will cause pass through or interference even if the user is not subject to National Pretreatment Standards or any national, state, or local requirements. A user shall have an affirmative defense against a violation of the general prohibitions where the user can demonstrate that:

(1) It did not know or have reason to know that its discharge singly or in conjunction with other discharges would result in pass through or interference with the POTW; and
(2) The discharge met the local limit designed to prevent pass through or interference or in the case of no local limit the user's discharge did not substantially change in nature or substance during the occurrence from the pre-occurrence conditions.

1.5.1.1.2. Specific Prohibitions

No user is to introduce to a POTW any of the following pollutants:

(1) Pollutants which create a fire or explosion hazard, including but not limited to, wastestreams with a closed cup flashpoint of less than 140 °F (60 °C);
(2) Pollutants which will cause corrosive structural damage or have a pH less than 5.0 standard units unless the POTW is designed to accommodate such pH levels;
(3) Solid or viscous pollutants in amounts that would obstruct the flow to the POTW thus resulting in interference;
(4) Any pollutant released in a discharge at such a volume or strength as to cause interference in the POTW;
(5) Heat in amounts that will inhibit biological activity in the POTW thus resulting in interference. In no case heat in such quantities that the temperature at the POTW treatment plant exceeds 104 °F (40 °C) unless the POTW requests and the Approval Authority grants alternate temperature limits;
(6) Petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass-through;

(7) Pollutants which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems; and,
(8) Any trucked or hauled waste except, at discharge points designated by the POTW

1.5.1.1.3. Local Limits

Limits developed by a POTW to implement the requirements of 1.5.1.1.1 General Prohibitions and 1.5.1.1.2 Specific Prohibitions are deemed to be pretreatment standards and are known as local limits. POTWs developing a pretreatment program are required to develop and enforce local limits. POTWs with approved pretreatment programs are required to continually evaluate the local limits and modify them as necessary. In the case where a POTW is not developing or does not have an approved pretreatment program and one or more users contribute pollutants that result in reoccurring pass through or interference the POTW shall, in addition to making appropriate changes to the POTW's treatment plant, develop and enforce appropriate local limits. In lieu of specific effluent limits the POTW may develop and Best Management Practices as local limits. Prior to the implementation of initial, new or revised local limits opportunity for public comment shall be provided.

1.5.1.2. National Pretreatment Standards – Categorical Standards

Pursuant to 401 KAR 5:057, Section 4 [40 CFR 403.6, July 1, 2006] categorical national pretreatment standards are to be applied to those users designated as categorical users. Like direct dischargers EPA has developed and promulgated categorical pretreatment standards for a number of indirect dischargers or industrial users. These standards are included in specific industrial subcategories pursuant to 401 KAR 5:065, Section 2(9) [40 CFR Parts 401 through 471, July 1, 2008].

1.5.1.2.1. Categorical Determinations

Upon request DOW shall provide certification that an industrial user is subject to a particular subcategory of categorical standards. When new categorical standards are promulgated by EPA either the user or the POTW may submit this request to DOW. In cases where existing source industrial users propose to add or change a process or operation shall request this certification prior to commencing discharge from the effected process or operation. Any new source industrial user shall request certification prior to commencing discharge.

Requests for certification shall include all necessary information and evidence for DOW to make a decision as to the applicability of the standards for a particular subcategory. The request shall be made in writing and shall include a statement describing potentially applicable subcategories citing evidence and reasons for applicability or non-applicability. The request shall be signed in accordance with the requirements of 401 KAR 5:060, Section 4 [40 CFR 122.22, July 1, 2008] and shall include the following certification statement.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

The request must be complete before DOW will make a written determination of the applicable subcategory. Applicants shall be given 30 days to correct any deficiency. Failure to correct deficiencies shall result in the denial of determination. Upon issuance of a written determination by DOW the requestor has 30 days from the date of receipt of notice of the final determination to submit a petition for reconsideration or contesting the decision to the Regional Administrator.

1.5.1.2.2. Pollutant Limits

Typically the pollutant limits for a categorical pretreatment standard will be expressed as either a concentration or mass based limitation. However in some instances the standard may be expressed in both concentrations and mass. When express in mass per unit of production the equivalent limits shall be expressed in the mass of pollutant discharged per day by multiplying the limits in the standard by the user's actual long-term daily production rate rather than the designed production rate. For new sources the actual production rate shall be estimated using projected production values. When determining equivalent concentration limitations the long-term daily flow shall be used.

1.5.1.2.3. Dilution

It is not unusual for an industrial user to combine wastestreams for more efficient treatment and pollutant removal. Both categorical and non-categorical wastestreams may be combined when both contain similar pollutants. This is an acceptable practice except when dissimilar wastestreams are combined for purpose of diluting the pollutant concentrations of a categorical standard. An industrial user can not use dilution to achieve compliance with a categorical standard unless the standard provides for dilution as an option.

1.5.1.2.4. Combined Wastestreams

When more than one wastestream is combined for treatment the POTW shall derive appropriate alternate effluent limits for each pollutant of concern. The methods used for calculating these alternate limits are presented below:

Case 1: All of the combined wastestreams are subject to categorical standards for the same pollutants of concern. The first step is to calculate the contribution from each wastestream as described in 1.5.1.2.2 Pollutant Limits. The calculated limits for each categorical wastestream are to be expressed in terms of mass. The final alternate effluent limit is then determined by summing the mass limits for each wastestream. When converting to a concentration limit the procedures of 1.3.1.1. Chemical-specific Numeric Effluent Limitations. In this case the permit shall monitor the combined wastestream for compliance after final treatment but prior to commingling with other wastewaters or discharge to the POTW.

Case 2: When one or more of the combined wastestreams are subject to categorical standards and one or more of the combined wastestreams are not subject to categorical standards then the POTW may elect to apply alternative limits calculated in the following manner or require apply the required pollutant limits to each categorical wastestream prior to being combined. In the later case the industrial user will be required to monitor the internal wastestreams and the combined wastestreams. The POTW may in lieu of the aforementioned approach calculate either concentration or mass limits to be applied to the combined wastestream using the following formulas.

Alternative Concentration Limits	Alternative Mass Limits
$C_T = \left[\frac{\sum_{i=1}^{N} C_i F_i}{\sum_{i=1}^{N} F_i}\right]\left[\frac{F_T - F_D}{F_T}\right]$	$M_T = \left[\sum_{i=1}^{N} M_i\right]\left[\frac{F_T - F_D}{\sum_{i=1}^{N} F_i}\right]$
Where: C_T = alternative concentration for combined wastestream C_i = categorical pretreatment standard concentration F_i = average daily flow of wastestream subject to categorical standards	Where: M_T = alternative mass limitation for the combined wastestream M_i = categorical pretreatment standard mass limitation F_i = average daily flow of wastestream subject to categorical standards

F_D = average daily flow of wastestreams not subject to categorical standards	F_D = average daily flow of wastestreams not subject to categorical standards

Should the calculated alternative pollutant limit be less than the most sensitive test method's MDL for that pollutant then the POTW shall impose the categorical calculated pollutant limits on the wastestream prior to being combined with other wastewaters.

1.5.1.3. Removal Credits

In general a POTW's treatment plant will remove to some degree pollutants that are listed in categorical pretreatment standards. The degree of removal is dependant upon the design and operation of the POTW's treatment plant. Pursuant to 401 KAR 5:057, Section 5 [40 CFR 403.7, July 1, 2006] at its discretion and subject to approval of DOW the POTW may grant industrial users removal credits less than or equal to the removal efficiency of the POTW's treatment plant for that pollutant.

1.5.1.3.1. Conditions for Authorization

POTW's electing to grant removal credits must meet the following requirements:

(1) The POTW applies to and receives from DOW approval to grant removal credits (See1.5.1.3.2 for application requirements);
(2) The POTW demonstrates and continues to achieve consistent pollutant removal (See for demonstration requirements);
(3) The POTW has an approved pretreatment program or has a pretreatment program pending before DOW;
(4) The granting of removal credits will not cause the POTW to violate local, state, or federal sludge management laws and regulations; and
(5) The granting of removal credits will not cause the POTW to violate the permit limits or conditions of the POTW's KPDES permit.

1.5.1.3.2. Application requirements

At any time a POTW may apply to DOW to receive authorization to grant removal credits. The application shall include: (1) the list of pollutants for which the POTW proposes to give removal credits, (2) data demonstrating consistent removal, (3) the proposed revised discharge limits for each affected industrial user, (4) a certification the POTW has an approved local pretreatment program, (5) a specific description of current sludge usage and disposal methods and a certification that granting removal credits will not cause of violation of sludge requirements, and (6) a certification that granting removal credits will not result in the violation of the KPDES permit.

1.5.1.3.3. Demonstration of Consistent Removal

401 KAR 5:057, Section 5 [40 CFR 403.7(b)(1), July 1, 2006] defines "Consistent Removal" as the lowest 50 percent of the removal of pollutant by the POTW over time. In order to demonstrate consistent removal the POTW is required to collect sufficient data that reflects yearly and seasonal variations in influent and effluent flows. Prior to commencing the data collection the POTW shall submit to DOW a study plan with the following components: (1) a list of the pollutants for which removal credits are being proposed, (2) duration of study (minimum of 12 months), (3) number of samples to be collected (minimum of 12 samples), (4) sampling procedures (composite, grab, etc), (5) analytical methods (40 CFR Part 136 approved), and (6) sample locations (effluent and influent). The POTW may commence collecting the necessary data for this demonstration after approval of study plan by DOW. Upon completion of data collection the POTW shall calculate removal efficiency by expressing the difference between the influent and effluent as a percentage. This analysis and the raw data shall be submitted to DOW with the other application requirements for authorization to grant removal credits.

1.5.1.3.4. Removal Credits Authorization

Upon DOW authorization to a POTW to grant removal credits DOW shall modify the POTW's KPDES permit to include the removal credits as enforceable conditions of the KPDES permit. The POTW may extend the removal credits for a pollutant to other categorical standards for that pollutant provided that such an action does to cause the POTW to violate the requirements and conditions of its KPDES permit or local, state, or federal sludge requirements. In order to maintain authorization to grant removal credits the POTW shall continue at the same frequency and locations the monitoring program approved for the removal credits demonstration. The POTW shall submit annual pollutant removal capability reports that include this compliance monitoring.

In the event these reports or other relevant information indicate that one or more of the discharge revisions no longer meet the requirements for the granting of removal credits or is causing the POTW to violate its KPDES permit DOW shall provide written notification to the POTW and the affected industrial users. The POTW and industrial users must take corrective action or propose modification of the removal credits within 60 days of this notification unless demonstrated that a longer period is appropriate. If the POTW and industrial users fail to take corrective action or modify the removal credits within the required timeframe DOW may modify the POTW's KPDES permit to withdraw or modify the authorization to grant removal credits. The reasons for the modification shall be documented in the fact sheet and the modification of the KPDES permit public noticed.

1.5.1.4. Development and Implementation

The development and implementation of a Pretreatment Program by a POTW is required by 401 KAR 5:057, Section 6 [40 CFR 403.8, July 1, 2006]. POTWs that meet one or more of the following criteria are required to develop, submit for approval, and implement specific pretreatment program requirements:

(1) A POTW or combination of POTWs operated by the same authority, with a total design flow greater than five (5) million gallons per day (MGD) and receiving from industrial users pollutants which pass through or interfere with the operation of the POTW, or are otherwise subject to pretreatment standards.
(2) A POTW with a design flow of five (5) MGD or less shall develop a pretreatment program if the cabinet determines that the nature or volume of the industrial wastewaters upsets of the treatment process, violations of the POTW effluent limitations, contamination of municipal sludge or other circumstances warrant preventing interference with the POTW or passing through.

Upon determination by DOW that a POTW meets one or more of these criteria written notification that the POTW is required to develop and implement a pretreatment program shall be provided. The POTW shall submit as soon as possible, but no later than one year from the date of notification a pretreatment program to the Surface Water Permits Branch for review and approval. Upon approval of a POTW's pretreatment program the POTW's KPDES permit shall be modified or reissued to incorporate the approved pretreatment program as enforceable conditions of the KPDES permit. The modification of a KPDES permit to incorporate the approved pretreatment program is deemed to be a minor modification.

1.5.1.4.1. Legal Authority

A POTW's legal authority to administer a pretreatment program shall be contained in statute, ordinance or other enabling agreement. At a minimum this legal authority shall enable the POTW to:

(1) Deny or condition any new or increased contributions of pollutants or change in the nature of pollutants from an industrial users resulting in the industrial user not complying with applicable pretreatment standards and requirements or cause the POTW to violate its KPDES permit;
(2) Require compliance with applicable pretreatment standards and requirements by industrial users;
(3) Control industrial user contributions and ensure compliance with applicable pretreatment standards and requirements through a permit, order or similar means;
(4) Control of a Significant Industrial User (SIU) through either an individual permit or if appropriate a general control mechanism;

(5) Require an industrial user to develop a compliance schedule for the installation of technology necessary to meet applicable pretreatment standards and requirements;
(6) Require industrial users to submit notices and self-monitoring reports to assess and assure compliance with applicable pretreatment standards and requirements;
(7) Conduct inspections, surveillance, and monitoring of industrial users to determine compliance with the pretreatment standards and requirements; and
(8) Obtain remedies for noncompliance either through injunctive relief or assessment of civil or criminal penalties.

1.5.1.4.2. Significant Industrial User Control Mechanisms (Permits)

Either a general or individual permit may be used by the POTW to control the contribution of pollutants from Significant Industrial Users. The use of a general permit requires all facilities to be covered to: (1) involve the same or substantially similar types of operations, (2) discharge same types of waste, (3) require same effluent limits, (4) require same or similar monitoring, and (5) are appropriately controlled by a general permit. SIUs subject to production-based categorical pretreatment standards, have limits expressed in terms of mass, have limits based on combined wastestream formula or net/gross calculations are not eligible for coverage under a general permit.

SIUs seeking coverage under a general permit shall provide written notification to the POTW. The contents of this notification shall include information regarding: (1) SIU contact, (2) production processes, (3) wastes generated, (4) monitoring locations, (5) requests for monitoring waivers if any, and (6) any other information the POTW deems appropriate. Requests for monitoring waives is not effective until the POTW has granted approval. The POTW shall retain a copy of the general permit, POTWs decision support documentation, and the SIUs written notification for 3 years after expiration of the general permit.

All permits must contain the following minimum conditions:

(1) A statement of duration not to exceed 5 years;
(2) A statement of non-transferability without notification of POTW;
(3) Effluent limitations based on general pretreatment standards, categorical pretreatment standards, local limits, and State and local law;
(4) Any Best Management Practices (BMPs) based on general pretreatment standards, categorical pretreatment standards, local limits, and State and local law
(5) A self monitoring program that includes sampling, reporting, notification and recordkeeping requirements;
(6) A statement of applicable civil and criminal penalties for violations;
(7) Any applicable compliance schedules; and
(8) Requirements to control slug discharges if necessary.

1.5.1.4.3. Procedures

The POTW shall develop and implement procedures to ensure compliance with the requirements of the pretreatment program. At a minimum these procedures shall enable the POTW to:

(1) Identify and locate all possible industrial users that may be subject to the pretreatment program;
(2) Indentify the character and volume of pollutants contributed by industrial users;
(3) Notify industrial users of applicable pretreatment standards and requirements;
(4) Receive and analysis self-monitoring reports and other notices;
(5) Randomly sample and analyze effluent from industrial users and conduct surveillance to identify noncompliance with pretreatment standards;
(6) Inspect and sample each SIU at least annually; and
(7) Evaluate the necessity for a SIU to have a plan or implement other actins to control slug discharges;

(8) Investigate non-compliances with pretreatment standards and requirements whether reported by the industrial user or as a result of inspections or surveillance activities by the POTW; and
(9) Provide annual public notification of significant non-compliance with the applicable pretreatment requirements by any industrial user

1.5.1.4.4. Funding

The POTW shall have sufficient resources and qualified personnel to implement the requirements of the pretreatment program.

1.5.1.4.5. Local Limits

The POTW shall develop local limits or demonstrate why local limits are not necessary.

1.5.1.4.6. Enforcement Response Plan (ERP)

The POTW shall develop an implement an Enforcement Response Plan detailing procedures for investigation and response to industrial user non-compliances. At a minimum this plan shall include the following:

(1) Description of how instances of non-compliance shall be investigated;
(2) Description of enforcement responses and timeframes for these responses for all anticipated types of industrial user violations;
(3) Indentify the title of the official responsible for each type of response; and
(4) Adequately reflect the POTW's primary responsibility to enforce all applicable pretreatment requirements

1.5.1.4.7. Significant Industrial Users (SIU) List

The POTW shall prepare and maintain a list of significant industrial users contributing to the POTW. The list shall include the criteria upon which the POTW determined the industrial user was a SIU or not an SIU.

1.5.1.5. Submission for Approval

Having received written notification from DOW that a POTW must develop and implement a pretreatment program the POTW must submit in accordance with 401 KAR 5:057, Section 7 [40 CFR 403.9, July 1, 2006] the following: (1) a statement from the POTW's Legal Council that the POTW has sufficient authority to administer the requirements of a pretreatment program, (2) a copy of any enabling statutes, ordinances, regulations, agreements, or other authorities empowering the POTW to administer a pretreatment programs, (3) a statement of endorsement or approval from the local board or body having supervision and/ or funding of the pretreatment program, (4) a description including charts of the POTW organization responsible for administering the pretreatment program, and (5) a description of funding levels and manpower available. The pretreatment program shall be consistent with the approved regional facilities plan for the POTW.

The statement from legal counsel shall identify: (1) for each procedure under 1.5.1.4.3 the provision of the legal authority that authorizes implementation, (2) how the POTW will implement the program requirements, (4) how the pretreatment standards will be applied to industrial users, and (5) compliance and enforcement procedures.

Within sixty (60) days of receipt of a submission DOW will provide written notification of completeness or deficiency of the plan. If the plan is deemed complete DOW's written notification will indicate the submission is complete and is under review and will commence public notice and evaluation procedures. If deficient DOW's written notification will identify the deficient areas and the means by which the POTW can comply.

1.5.1.6. Evaluation and Public Notice Procedures

Pursuant to 401 KAR 5:057, Section 8 [40 CFR 403.11, July 1, 2006] DOW shall issue a public notice seeking comments on submissions to: (1) administer or make substantial modifications a pretreatment program, and/or (2) grant removal credits. DOW shall provide electronic notification to those interested parties that have provided accurate e-mail addresses, post the submission on the DEP Pending Approvals Search page, and place an add in a newspaper of general circulation within the POTW's service area. The public notice period shall be 30 days during which time interested parties may submit written comments or request a public hearing. Should a public hearing be granted the same public notice procedures shall be followed to advertize the public hearing. After the closed of the public notice period DOW will issue either an approval or denial of the request. In the event DOW determines to deny the request DOW will provide written notification of its decision and include suggested modifications. DOW may allow the requestor additional time to address modifications to the submission. DOW shall public notice its final determination using the same procedures described in this section.

1.5.1.7. Reporting Requirements

In accordance with 401 KAR 5:057, Section 9 [40 CFR 403.12, July 1, 2006] industrial users, both categorical and non-categorical, are required to submit to the POTW periodic reports regarding their activities. This regulation also establishes POTW reporting requirements to DOW. The type, content, and frequency of these reports are detailed in the following discussions.

1.5.1.7.1. Categorical Industrial Users

Within 180 days of the effective date of a new categorical pretreatment standard or a categorical determination by DOW an existing user shall provide to the POTW a baseline report that provides the following information: (1) the name and address of the facility including the name of the operator and owners, (2) a list of any environmental control permits held, (3) a description of the nature, average production rate, and SIC Code of each operation, (4) a process diagram that indicates discharge points from regulated processes, (5) the average daily and maximum daily flows, in gpd, of all wastestreams discharged to the POTW, (6) the pretreatment standards that apply to each regulated process, (7) daily maximum and average concentrations and/or mass of regulated pollutants for each regulated process, (8) if appropriate documentation demonstrating compliance with Best Management Practices (BMPs) or pollution preventative alternative, (9) a compliance schedule if additional pretreatment or additional operation and maintenance is required for the industrial user to meet the pretreatment standards and requirements, and (10) a certified statement indicating consistent compliance with the pretreatment standards and requirements or that additional pretreatment an/or operation and maintenance is required.

At a minimum the industrial user shall collect one representative sample to determine the pollutant concentrations and/or mass. Samples are to be representative of the daily operations and shall be taken immediately after any pretreatment facilities the industrial user may have

For new sources and sources that become industrial users subsequent to the promulgation of an applicable categorical standard shall submit at least ninety (90) days prior to commencement of discharge the information requirements of (1) through (8) in the first paragraph of this section. New sources shall also include the method of pretreatment to be used to meet applicable pretreatment standards. New sources shall give estimates for flow and pollutant quality and quantities.

1.5.1.7.1.1. Compliance Schedules

When an industrial user requires a compliance schedule to install additional pretreatment equipment or make operational changes to comply with categorical pretreatment standards the schedule shall include milestone dates for the commencement and completion of major events. The time between milestones shall not exceed 9 months. The industrial user shall submit within 14 days of expiration of each date a progress report on whether the requirement was met or not. Compliance shall be achieved in the shortest period possible but not to exceed the compliance date established by the applicable pretreatment standard. Within 90

days of completion of the final compliance date the industrial user shall submit to the POTW a report containing items 4 through 8 and 10 in paragraph 1 of 1.5.1.7.1 Categorical Industrial Users. The report shall contain a reasonable measure of the user's long term production rate if applicable.

1.5.1.7.1.2. Periodic Reports

Twice annually, during the months of June and December, industrial users subject to categorical pretreatment standards shall submit a report indicating the nature and concentration of pollutants in the effluent. The report shall include measured or estimated average and maximum daily flow rates for the reporting period. When compliance with BMPs is required the industrial user shall submit documentation required by the POTW to demonstrate compliance. At its discretion the POTW may modify the months when the reports are to be submitted. For those industrial users required to meet equivalent mass or concentration limits a reasonable measure of the industrial user's long term production rate shall be included. Actual production rates shall be included when the industrial user's permit limits are expressed only in terms of allowable pollutant discharged per unit of production.

1.5.1.7.1.2.1. Waiver of Sampling

If an industrial user can demonstrate that a pollutant regulated by a categorical pretreatment standard is not present in the discharge then the POTW may grant a waiver from sampling. In the case where it is present in the industrial user's discharge however this presence is due to background levels in the intake water only and the industrial user can demonstrate that it has not increased the pollutant due to its activities the POTW may grant a waiver from sampling. The POTW may grant a sampling wavier where demonstrated the pollutant is present only in the sanitary wastewater and that the sanitary wastewater is not subject to a categorical standard.

Requests for waivers shall include at least one representative sample of all process wastewaters prior to treatment, be signed by the appropriate responsible party as determined in Section X, and include the certification statement in Section 1.5.1.2.1 Categorical Determinations. Non-detectable sample results are useable only if the most sensitive EPA approved method was used for the pollutant analysis. The POTW shall modify or reissue the industrial user's permit to incorporate the sampling waiver.

Reports from industrial users granted sampling waivers shall include the following certification:

Based on my inquiry of the person or persons directly responsible for managing the compliance with the pretreatment standard for 40 CFR [specify applicable National Pretreatment Standard part(s)], I certify that, to the best of my knowledge and belief, there has been no increase in the level of [list pollutants] in the wastewaters due to activities at the facility since filing of the last periodic report under 40 CFR 403.12(e)(1).

In the event changes to the industrial user's operation occurs that results in the waived pollutant now being present the industrial user shall immediately begin monitoring for that pollutant. Waivers are granted for the term of the industrial user's permit and must be reapplied for when the industrial user's permit is renewed by the POTW.

1.5.1.7.1.2.2. Reduction in Monitoring Frequency

The POTW may grant a reduction in the reporting frequency from twice per year to once per year provided the industrial meets all of the following conditions:

(1) The total categorical wastewater flow does not exceed any of: (a) 0.01 % of the design dry weather hydraulic capacity of the POTW or 5,000 gpd whichever is smaller, (b) 0.01 % of the design dry weather organic treatment capacity of the POTW, and (3) 0.01% of the maximum allowable headworks loading for any pollutant regulated by the applicable categorical pretreatment standard for which approved local limits have been developed;
(2) The industrial user has not been in significant non-compliance for any time in the past two years;

(3) The industrial user's daily flow rate, production levels, or pollutant do not vary sufficiently that decreasing the reporting requirement would result in data not representative of the conditions during that monitoring period.

The industrial user must notify the POTW of any changes at its facility that would cause it to no longer meet conditions 1 or 2 above. The POTW shall maintain the support documentation for 3 years after expiration of the industrial user permit.

1.5.1.7.2. Non-categorical Industrial Users

The POTW shall require appropriate reporting from all industrial users of discharge activities to demonstrate compliance with local limits. Significant Non-categorical Industrial Users shall submit to the POTW a report every six months that describes the nature and concentration of pollutants and the discharge flow from all process wastewaters. Where local limits require compliance with BMP requirements the industrial user shall submit appropriate documentation demonstrating compliance. The reports shall include sampling and analysis results obtained during the period covered by the report. All samples and analysis are to be performed in accordance with 40 CFR Part 136.

1.5.1.7.3. Monitoring and Analysis Requirements

The results of the required sampling and analysis of the industrial user's discharge shall be included in the reports submitted to the POTW. At a minimum the flow and the nature and concentrations of the pollutants limited by the pretreatment standards shall be reported. Production rates and pollutant mass shall be included in the reports when appropriate. Submission of these reports by the industrial user is not required when the POTW performs the sampling and analysis of the industrial user's discharge.

If samples collected by the industrial user indicates a violation of its permit limits the industrial user shall notify the POTW within 24 hours of becoming aware of the violation. Within 30 days of becoming aware of the violation the industrial user shall repeat the sampling and analysis and submit the results to the POTW. Where the POTW has collected and analyzed the sample the POTW shall repeat the sampling event or shall notify the industrial user of the violation and require the industrial user to perform the repeat sampling and analysis. The industrial user will not have to resample if the POTW performs sampling of the industrial user's discharge: (1) at a frequency of once per month or greater or (2) between the time the collection of the initial sample and receipt of the results of that sample.

Sample data included in the required reports must be representative of the discharge activities of the industrial user during the reporting period. Monitoring of the industrial user's discharges shall be at frequency sufficient to adequately assess and assure compliance with the pretreatment standards and requirements applied to industrial user's discharges. Sample techniques and analyses employed shall be consistent with the requirements of 40 CFR 136. If the regulated pollutants are monitored in accordance with established protocols more frequently than required then the results of that monitoring shall be included in the report.

1.5.1.7.4. Annual POTW Reports

POTW's with approved pretreatment programs shall submit an annual report to DOW that briefly describes the POTW's program activities. At a minimum the report shall include the following information: (1) a current list of industrial users, (2) a summary of the industrial users compliance during the preceding year, (3) a summary of compliance, enforcement, and inspection activities conducted by the POTW during the preceding year, (4) a summary of any changes to POTW's pretreatment program, and (5) any other relevant information required by DOW.

The industrial users list shall include: (1) the name and address of each industrial user, (2) the standards that are applicable to each industrial user, (3) the type of standards that apply (i.e. categorical, local standards more stringent than categorical or local standards only), (4) additions and deletions, (5) an explanation of any deletions, (6) which industrial is subject to reduce reporting requirements, and (7) which industrial users are Non-Significant Categorical Industrial Users.

1.5.1.7.5. Notifications

All industrial users shall immediately notify the POTW of any and all discharges that are slug loadings or could cause problems to the POTW. All industrial users shall notify the POTW in advance of any anticipated substantial change in the volume or character of the pollutants in their discharge.

An industrial user shall provide written notification to the POTW, DOW, the Division of Waste Management, and EPA Region 4 Waste Management Director, of any discharge of a substance that would be classified as hazardous under 40 CFR Part 261. The notification shall include: (1) the name of the hazardous waste, (2) the EPA hazardous waste number, (3) the type of discharge, i.e. continuous, batch or other, and (4) volume of the waste is discharged per calendar month. If more than 100 kilograms per calendar month is discharged then the notification shall include: (1) identification of the hazardous constituents, (2) an estimation of the mass and concentration of each constituent discharge during that calendar month, and (3) an estimation of the mass and concentration of each constituent discharged during the following 12 months. This notification shall be submitted within 180 days of commencement of the discharge. Notification is not required if less than 15 kilograms of the hazardous waste is discharged per calendar month unless the waste is classified as acute hazardous wastes in accordance with 40 CFR 261.30(d) and 261.33(e). In the event of the listing of additional hazardous wastes or substances the industrial user shall provide notification within ninety (90) days of the listing of the waste.

1.5.1.7.6. Signatory Requirements

1.5.1.7.6.1. Industrial Users

Industrial user reports shall be signed by: (1) a responsible corporate officer if a corporation, (2) a general partner if a partnership, (3) a proprietor if a sole proprietorship, or (4) a duly authorized representative of the individual of any of the preceding responsible parties.

Corporate officer means a president, vice president, secretary, or treasurer in charge of a principal business function. Corporate officers include managers of one or more manufacturing, production or operating facilities. If a manager the authority to sign must have been assigned or delegated in accordance with corporate procedures. The manager shall: (1) be authorized to make management decisions governing the operation, (2) have explicit or implicit duty of making recommendations regarding major capital investments, (3) be able to initiate and direct comprehensive measures to assure long-term environmental compliance, and (4) ensure that necessary systems are established or actions taken to gather complete and accurate information.

In the case of a duly authorized representative written authorization from the responsible party specifying an individual or position having responsibility for the overall operation of the facility shall be submitted to the POTW. A new authorization shall be submitted if there is a change in the duly authorized representative.

1.5.1.7.6.2. POTWs

POTW reports shall be signed by a principal executive officer, the ranking elected official, or a duly authorized employee. Like a duly authorized representative the duly authorized employee can be an individual or position. The duly authorized employee shall have the responsibility for the overall operation of the Pretreatment Program. Written authorization from the principal executive office or ranking elected official designating a duly authorized employee shall be submitted to DOW. A new authorization shall be submitted if there is a change in the duly authorized employee.

1.5.1.7.7. Record-Keeping Requirements

Records for samples collect shall include: (1) the time and date of sample collection, (2) exact place of sample collection, (3) sample method used, (4) names of persons taking samples, (5) dates of analyses were performed, (6) names of persons performing analyses, (7) analytical methods used, and (8) results of the

analyses. Such records shall be maintained for a minimum of 3 years and shall be made available for inspection and copying by DOW, EPA or the POTW. The retention period shall be extended during the course of unresolved litigation or when requested by DOW or EPA.

1.5.1.7.8. Non-Significant Categorical Industrial Users Annual Certifications

Non-Significant Categorical Industrial Users must submit the following certification statement to the POTW annually.

Based on my inquiry of the person or persons directly responsible for managing the compliance with the pretreatment standard for 40 CFR [specify applicable National Pretreatment Standard part(s)], I certify that, to the best of my knowledge and belief that during the period from [month, day, year] to [month, day, year]: (a) The facility described as [facility name] met the definition of a non-significant categorical Industrial User as described in §403.3(v)(2); the facility complied with all applicable Pretreatment Standards and requirements during this period; and (c) the facility never discharged more than 100 gallons of total categorical wastewater on any given day during this reporting period. This compliance certification is based upon the following information [include supportive documentation

1.5.1.8. Fundamentally Different Factors Variances

An industrial user, POTW, or other interested person may seek a variance from a categorical pretreatment standard based limitation for an exist source on the basis of fundamentally different factors. The procedures for seeking such a variance are specified in 401 KAR 5:057, Section 10 [40 CFR 403.13, July 21, 2006].

1.5.1.8.1. Criteria

General criteria for a fundamentally different factors variance request: (1) there is an applicable categorical pretreatment standard, (2) factors relating to the discharge are fundamentally different from the factors considered by EPA in developing the standards, and (3) the request is made within the specified deadlines and contains the required information.

Requests for less stringent requirements shall demonstrate that the alternate limit: (1) is no less stringent than justified by the fundamental difference, (2) not result in a violation of the prohibitive discharge standards, (3) not result in a non-water quality environmental impact fundamentally more adverse than that considered by EPA in developing the standard, and (4) compliance with the standards would result in either removal costs wholly out of proportion to those considered in the development of the standard or a non-water quality environmental impact fundamentally more adverse than that considered in the development of the standard.

Requests for more stringent requirements shall demonstrate that the alternate limit: (1) is no more stringent than justified by the fundamental difference, and (2) compliance would not result in either removal costs wholly out of proportion to those considered in the development of the standard or a non-water quality environmental impact fundamentally more adverse than that considered in the development of the standard.

1.5.1.8.2. Fundamentally Different Factors

Factors that may be considered fundamentally different include: (1) nature or quality of pollutants in the process wastewaters' raw waste load, (2) volumes of process wastewater and effluent discharged, (3) non-water quality environmental impact of control and treatment of raw waste load, (4) energy requirements of control and treatment technology, (5) age, size, land availability, and configuration of equipment, facilities, processes employed, process changes, and engineering aspects of the application of control technology, and (6) cost of compliance with required control technology.

Factors that will not be considered include: (1) feasibility of installing required waste treatment equipment within regulatory time frames, (2) assertion that standards cannot be achieved with appropriate waste treatment equipment installed, (3) ability to pay for required waste treatment, and (4) the impact of a discharge on the quality of the POTW's receiving waters.

1.5.1.8.3. Requests Deadline and Contents

Written requests for fundamentally different factors are to be submitted to DOW within 180 days of the date the categorical pretreatment standard is published in the Federal Register. In the case where an industrial user has requested a categorical determination the request must be filed within 30 days after a final decision on the categorical determination has been made by DOW.

The request shall include the following information: (1) name and address of the requester, (2) interest of the requester, (3) name of the POTW, (4) categorical pretreatment standards applicable to the industrial, (5) list of pollutants or pollutant parameters for which a variance is being sought, (6) the alternative discharge limits proposed by the requester, (7) description of industrial user's existing water pollution control facilities, (8) flow diagram including water supply, process water systems, and points of discharge, and (9) statement of facts why request should be approved including supportive data. Only complete requests will be acted on, the requester will be notified by DOW of any deficiencies and given 30 days to correct the deficiencies. Failure to correct the deficiencies will result in the denial of the request.

1.5.1.8.4. Public Notice and Requests for Hearing

DOW shall provide electronic notification to those interested parties that have provided accurate e-mail addresses, post the submission on the DEP Pending Approvals Search page, and place an add in a newspaper of general circulation within the POTW's service area. The public notice period shall be 30 days during which time interested parties may submit written comments. After the closed of the public notice period DOW will issue either an approval or denial of the request. In the event DOW determines to deny the request DOW will provide written notification of its decision and include suggested modifications. DOW may allow the requestor additional time to address modifications to the submission. DOW shall public notice its final determination using the same procedures described in this section.

1.5.1.9. Net/Gross Limits

At the request of an industrial user the POTW may adjust categorical pretreatment standards to reflect the presence of pollutants regulated by the categorical pretreatment standard in the industrial user's intake waters. Such adjustments grant credits for the intake pollutants and are authorized by 401 KAR 5:057, Section 12 [40 CFR 403.15, July 1, 2006]. The following criteria apply to a net/gross credit:

(1) The categorical standard allows for net limits or the industrial user demonstrates that its control system being properly installed and operated would meet the categorical standard in the absence of the intake pollutants;
(2) Requests for credit for BOD, TSS, and Oil & Grease shall demonstrate the measure of these pollutants in the user's effluent and the intakes are substantially similar;
(3) Credit given shall be that necessary to meet the categorical standard up to a maximum credit of the intake pollutant levels;
(4) The industrial user's intake water is drawn from the same body of water into which the POTW discharges.

1.5.1.10. Upsets

An upset is defined in 401 KAR 5:057, Section 13 [40 CFR 403.16, July 1, 2006] as an unintentional and temporary noncompliance with a categorical pretreatment standard caused by factors beyond the reasonable control of the industrial user. Operational errors (including careless or improper operation) inadequate treatment systems (improperly designed treatment systems), or lack of preventative maintenance are not considered factors beyond the reasonable control of an industrial user.

A demonstration that an upset condition has occurred shall take the form of properly signed contemporaneous operating longs or other relevant evidence that: (1) an upset occurred and the industrial user can identify the cause(s), (2) at the time the upset occurred the facility was being properly operated in compliance with applicable operation and maintenance procedures, and (3) within 24 hours of becoming aware of the upset the industrial user provided a description and cause of the noncompliance, the period of noncompliance, and steps being taken and/or planed to reduce or eliminate and prevent reoccurrence. A successful demonstration of an upset by the industrial user shall constitute an affirmative defense to an action brought for a noncompliance with categorical pretreatment standards.

In the event of a reduction, loss, or failure of its treatment facility the industrial user shall, until restoration of the treatment plant or alternative treatment provided, control all discharges and production such that compliance with the categorical pretreatment standards is maintained.

1.5.1.11. Bypass

A bypass is the intentional diversion of wastestreams from any portion of an industrial user's treatment facilities. A bypass resulting in the violation of a categorical pretreatment standard is prohibited pursuant to 401 KAR 5:057, Section 14 [40 CFR 403.16, July 1, 2006] unless:

(1) It was unavoidable to prevent loss of life, personal injury, or severe property damage. Severe property damage means substantial physical damage to the property, damage to the treatment facilities rendering them inoperable, or substantial and permanent loss of natural resources. Economic loss caused by delays in production is not considered severe property damage;

(2) No feasible alternatives to the bypass, such as auxiliary treatment facilities, retention of untreated wastes, or completion of maintenance during normal shut down periods were possible. However in the exercising of reasonable engineering judgment adequate back-up equipment should have been installed to prevent the bypass this condition is not met;

(3) The industrial user submits written notification to the POTW, at least 10 days in advance, of the need to bypass or in the case of an unanticipated bypass oral notification within 24 hours of becoming aware of the bypass followed by written notification within 5 days. Written notifications shall include a description of the bypass and its cause, the duration of the bypass, if not corrected anticipated time expected to continue, and steps taken or planned to reduce, eliminate and prevent the reoccurrence of the bypass.

Bypasses not resulting in a violation of applicable pretreatment standards may be allowed provided it is for essential maintenance to assure efficient operation. All anticipated bypasses must be reviewed and approved by the POTW prior to commencement of the bypass.

1.5.1.12. Pretreatment Program Modifications

At any time, pursuant to 401 KAR 5:057, Section 15 [40 CFR 403.18] DOW or the POTW may initiate to reflect changing conditions at the POTW. Modifications of a pretreatment program are categorized either as substantial or non-substantial modifications.

Substantial modifications to a pretreatment program include: (1) relaxation of the POTW's legal authorities, (2) relaxation of local limits, (3) changes to POTW's control mechanisms, (4) a decrease in the frequency of industrial user's self-monitoring and reporting requirements, (5) decrease in the POTW's inspection and sampling of industrial users, (6) changes to the POTW's confidentiality procedures, and (7) those modifications DOW designates as substantial on the basis of the modification could have significant impact on the operation of the pretreatment program, result in increased pollutant loadings at the POTW, or could result in less stringent requirements being imposed on the industrial users. The evaluation and public notice procedures for substantial modifications are the same as those for approval of a program or removal credits as detailed in Section 1.5.1.6 of this fact sheet.

Examples of non-substantial modifications to a pretreatment program include but are not limited to: (1) modification of the POTW's legal authorities to directly reflect changes to the pretreatment regulations 401 KAR 5:057 [40 CFR 403, July 1, 2006] or changes to categorical pretreatment standards in 401 KAR 5:065, Section 2 [40 CFR 401-471, 503 July 1, 2008], (2) modifications to relax local limits for pH, (3) modifications to reallocate pollutant loadings among industrial users provided the total load is not increased, (4) increases in monitoring frequencies or inspections, etc. The POTW shall submit proposed non-substantial modifications to DOW for review a minimum of 45 days prior to proposed implementation. Unless otherwise notified by DOW of its decision to deny or categorize the modifications as substantial within 45 days of receipt the POTW may implement the modifications.

All modifications of the pretreatment program, whether substantial or non-substantial, shall be incorporated in the POTW's KPDES by DOW through a minor modification of the KPDES permit.

1.5.1.13. Inactivation of a Pretreatment Program

Should the conditions as stated in Section 1.5.1.4 of this fact sheet that necessitated the development and implementation of a pretreatment program by a POTW no longer exist the POTW may request to inactivate its pretreatment program.

1.5.1.13.1. Procedures for Inactivation

In seeking to inactivate its pretreatment program the POTW shall submit a request to DOW that details the conditions that necessitated the development and implementation of a pretreatment program and an explanation of how those conditions have changed. In the event these conditions were discharges from SIUs as defined in 401 KAR 5:002, Section 1(145) [40 CFR 403.3(v) then the following information shall be provided: (1) a list of SIUs that discharged to the POTW, (2) the types and volumes of wastewaters discharged by the SIUs, (3) the reason the industrial user was categorized as a SIU, (4) the dates the SIUs ceased discharging process wastewaters to the POTW, (5) the date the SIU became a non-significant industrial user, (6) a certification from the SIU that it longer discharges process wastewater to the POTW or is a non-significant industrial user, and (6) a copy of the POTW's inspection report verifying the cessation of discharge of process waters or the industrial user is non-significant.

For those industrial users that are now non-significant industrial users the certification in Section 1.5.1.7.8 of this fact sheet. The certification of cessation of discharge from the SIU shall take the following form.

Based on my inquiry of the person or persons directly responsible for managing the compliance with the pretreatment standard for 40 CFR [specify applicable National Pretreatment Standard part(s)], I certify that, to the best of my knowledge and belief that on [month, day, year] [facility name] ceased to discharge categorical wastewaters to the POTW.

DOW shall review the request and notify the POTW in writing of its determination. Should DOW concur with the request the KPDES permit shall be modified to denote the inactivation of the pretreatment program. Such an action is a major modification of the permit and substantial modification of the pretreatment program subject to the requirements of 401 KAR 5:070, Section 6 [40 CFR 122.62, July 1, 2009] and 401 KAR 5:057, Section 15 [40 CFR 403.18].

1.5.1.13.2. Effective of Inactivation

In the event DOW concurs with the inactivation of a pretreatment program the POTW may cease monitoring and inspecting of the industrial users and reporting to DOW upon the effective date of the modified KPDES permit. However the POTW shall continue to enforce the discharge prohibitions listed in Sections 1.5.1.1.1 General Prohibitions and 1.5.1.1.2 Specific Prohibitions of this fact sheet. The POTW shall conduct industrial waste surveys on an annual basis and as s result of a new industrial user discharging to the POTW to determine if the pretreatment program needs to be reactivated. The results of these the industrial waste surveys

shall be submitted to DOW no later than 30 days after completion. In the event conditions warrant reactivation of the pretreatment program the POTW shall immediately begin enforcing the requirements of the pretreatment program and notify DOW of the necessity to reactivate its pretreatment program.

1.5.2. Sludge Disposal

Sludge is the residual semi-solid material generated during the process of treating wastewaters. Sewage sludge is the sludge that is generated during the treatment of domestic wastewaters. The final use or disposal of sewage sludge generated by a POTW is subject to the standards, requirements and conditions established in 401 KAR 5:065, Section 2(10) [40 CFR 503, effective July 1, 2008]. Depending on the quality of the sludge, i.e. pollutant concentrations, it may be land applied to ameliorate soils or serve as a fertilizer, or it may be disposed of either by incineration or placement in a landfill. In addition to these standards 40 CFR 503.1(a)(2) establishes monitoring and recordkeeping requirements for Class I Sludge Management Facilities, POTWs with a design flow rate of 1,000,000 gallons per day or serves a population of 10,000 or greater. A Class I Sludge Management Facility is any POTW required to have an approved pretreatment program under 401 KAR 5:057, Section 6 [40 CFR 403.8(a), July 1, 2006] or any POTW, because of the potential for its sewage sludge use or disposal practice would adversely affect public health and environment, classified by the EPA Region 4 administrator in conjunction with the Directors of the Division of Waste Management (DWM) and Division of Water (DOW) as a Class I Sludge Management Facility.

1.5.2.1. Exclusions

The requirements established in 401 KAR 5:060, Section 2(10) [40 CFR 503.6, July 1, 2008] do not mandate to the Class I Sludge Management Facility or POTW the manner in which the generated sewage sludge is disposed or used. This determination is a local decision made by the facility. In accordance with 401 KAR 5:060, Section 2(10) [40 CFR 503.6, July 1, 2008] the requirements have not been established under this regulation for the following:

(1) Processes used to treat domestic sewage or processes used to treat sewage sludge prior to final use or disposal, except for Class A Sludge;
(2) Sewage sludge co-fired in an incinerator with other wastes, except auxiliary fuels, or the incinerator;
(3) Sewage sludge generated at an industrial facility;
(4) Sewage sludge determined to be hazardous;
(5) Sewage sludge with PCB concentrations of 50 mg/kg or higher;
(6) Ash generated during the incineration of sewage sludge
(7) Use or disposal of grit or screenings generated during preliminary treatment of domestic sewage at the POTW;
(8) Drinking water treatment plant sludge; or
(9) Septage (commercial, industrial, or a mixture of domestic septage with either commercial or industrial)

1.5.2.2. Implementation

No person shall use or dispose of sewage sludge except in accordance with the requirements established in 401 KAR 5:065, Section 2(10) [40 CFR 503, effective July 1, 2008]. These requirements may be implemented through permits issued to the POTW under the KPDES program (401 KAR 5:055 through 401 KAR 5:080) or under the special wastes program administered by the Kentucky Division of Waste Management (401 KAR Chapter 45).

1.5.2.3. Sampling and Analysis

Pursuant to 401 KAR 5:060, Section 2(10) [40 CFR 503.8, July 1, 2008] regardless of the use or disposal method selected the permittee shall collect representative samples of the sewage sludge for analysis in accordance the methods incorporated in 40 CFR 503.8(b). The frequency of analysis and reporting shall be as specified in the following table.

Metric Tons/Year of Sewage Sludge	Sample Frequency	Reporting Frequency
Less than 290	Once per year	Annual
Equal to or greater than 290 but less than 1,500	Once per quarter (4/year)	Annual
Equal to or greater than 1,500 but less than 15,000	Once per 60 days (6/year)	Annual
Equal to or greater than 15,000	Once per month (12/year)	Annual

The sludge shall be analyzed for the following parameters as per the schedule in the preceding table: (1) Arsenic, (2) Cadmium, (3) Chromium, (4) Copper, (5) Lead, (6) Mercury, (7) Molybdenum, (8) Nickel, (9) Phosphorus, (10) Selenium, (11) Silver, (12) Percent Solids, (13) Zinc, and (14) pH. The results of these analyses shall be reported on an annual Discharge Monitoring Report (DMR).

1.5.2.4. Land Application

Land application, i.e. landfarming, or composting of sewage sludge conducted in accordance with the requirements established in 401 KAR Chapter 45 Special Waste administered by DWM meets the requirements established in 401 KAR 5:060, Section 2(10) [40 CFR 503.10 through 503.18, 503.32 and 503.33, July 1, 2008]. The permitting requirements and standards established within Chapter 45 are commensurate with those of 40 CFR 503.

1.5.2.5. Surface Disposal

The surface disposal or placement of sewage sludge in a landfill permitted pursuant to 401 KAR Chapter 47 administered by DWM meets the requirements established in 401 KAR 5:060, Section 2(10) [40 CFR 503.20 through 503.28, July 1, 2008]. The permitting requirements and standards established within Chapter 47 are commensurate with those of 40 CFR 503.

1.5.2.6. Incineration

The incineration of sewage sludge conducted in accordance with the requirements established in 401 KAR Chapters 59 and 61 administered by the Division of Air Quality (DAQ) meets the requirements established in 401 KAR 5:060, Section 2(10) [40 CFR 503.40 through 503.48, July 1, 2008]. The permitting requirements and standards established within Chapters 59 and 61 are commensurate with those of 40 CFR 503.

1.5.2.7. Annual Reporting

In addition the reporting requirements of Section 1.5.2.3 of this fact sheet the permittee shall report of number of metric tons per year of sludge disposed by: (1) land application (land farming or composting), (2) placed in a landfill, (3) incineration, and/or (4) other methods (describe method). This information shall be reported on the DMR for reporting the sludge quality.

1.5.3. Wet Weather Related Operation and Maintenance

Pursuant to 401 KAR 5:065, Section 2(1) [40 CFR 122.41(a),(d), & (e), July 1,2008] permittees are required to comply with all conditions of the KPDES permit, to take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of the KPDES permit, and shall at all times properly operate and maintain all facilities and systems of treatment and control, including all related appurtenances, used by the permittee to achieve compliance with the conditions of the KPDES permit. Compliance with these requirements can become particularly challenging for POTWs when the collection system and treatment plants are influenced by the addition of stormwater.

The integrity of the collection system is a key component in the successful treatment of the wastewaters collected and conveyed to the wastewater treatment plant. Broken or blocked sewer pipes, pump station failures, or insufficient conveyance capacity can result in collection system overflows and the discharge of untreated

wastewaters to the environment or may allow storm water to enter the collection system and overwhelm or even bypass portions of the treatment system at the wastewater treatment plant. Collection systems that convey only wastewaters from homes and buildings, including industrial wastewaters, are known as sanitary sewers. Thus overflows, occurring in such systems are sanitary sewer overflows or SSOs. Some collection systems in addition to conveying sanitary wastewaters also convey stormwater runoff from these areas. Such systems are known as combined sewers and the overflows known as CSOs. SSOs and CSOs present serious problems for the environment and the proper operation and maintenance of the POTW's collection and treatment systems. In order to address the issues that arise from these events DOW implements a number of initiatives in these areas.

1.5.3.1. SSOs

All systems on occasion may have isolated SSOs due to unforeseen conditions that result in the discharge of untreated or partially treated wastewater from the collection system prior to reaching the wastewater treatment plant. However when such occurrences become chronic then significant risks to human health and the environment exist. To address the issues that arise from chronically occurring SSOs DOW may require the POTW to develop and implement a Sanitary Sewer Overflow Plan (SSOP). The goals of the SSOP are: (1) to identify chronic SSOs, (2) to identify the root causes of the SSOs, (3) to propose remedies, (4) to reduce the frequency, duration and volume of the SSOs or to cease the SSOs, and (5) initiate proactive practices to prevent reoccurrences. Elements of the SSOP can include but are not limited to; (1) I/I (inflow/infiltration) studies, (2) a Sewer Overflow Response Protocol (SORP), (3) a CMOM (Capacity, Management, Operation, and Maintenance) Program, (4) or other actions deemed necessary by DOW.

1.5.3.1.1. CMOM Program

The goals of a CMOM Program are: (1) to better manage, operate, and maintain collection systems, (2) investigate capacity constrained areas of the collection system, (3) proactively prevent or minimize SSOs, and (4) respond to SSO events. The CMOM program should incorporate many of the standard operation and maintenance activities that are routinely implemented. By implementing a CMOM Program the POTW can move from a reactive approach to maintenance to a proactive approach that results in fewer SSOs, improved wastewater treatment, and less expense.

1.5.3.2. CSOs

Combined sewers are designed to collect stormwater, domestic sewage and industrial wastewaters in the same pipe. Overflows from these types of collection systems present a more serious public health and environmental impact. CSOs not only contain untreated human wastes but can contain untreated industrial wastes, toxic materials and debris. EPA through its 1994 Combined Sewer Overflow Control Policy has established a framework for the control of these types of discharges. Implementation of the CSO Control Policy is effected through the NPDES or KPDES permit program. POTWs that have CSOs are required to implement a two phased approach to the control of CSOs. Phase I is implementation of the Nine Minimum Controls and Phase II is the implementation of a Long Term Control Plan. The KPDES permit shall incorporate the Nine Minimum Controls and the Long Term Control Plan as enforceable conditions of the permit.

1.5.3.2.1. Nine Minimum Controls

The nine minimum controls required by EPA's CSO Control Policy are as follows:

1. Proper operation and regular maintenance programs for the sewer system and the CSOs
2 Maximum use of the collection system for storage
3 Review and modification of pretreatment requirements to assure CSO impacts are minimized
4 Maximization of flow to the POTW for treatment
5 Prohibition of CSOs during dry weather

6 Control of solid and floatable materials in CSOs
7 Pollution prevention
8 Public notification
9. Monitoring to effectively characterize CSO impacts and efficacy of CSO controls

1.5.3.2.2. Long Term Control Plan (LTCP)

The elements of a LTCP are:

1. Characterization, monitoring, and modeling of the combined sewer system
2. Public participation
3. Consideration of sensitive areas
4. Evaluation of alternatives to meet CWA requirements using either the "presumption approach" or the "demonstration approach"
5 Cost/performance considerations
6. Operational plan
7. Maximizing treatment at the existing POTW treatment plant
8. Implementation schedule
9 Post-construction compliance monitoring program

1.5.4. Best Management Practices Plan

Best management practices (BMPs) are defined at 401 KAR 5:080, Section 2(1) [40 CFR 122.2] as schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of "waters of the United States." BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. Pursuant to 401 KAR 5:065, Section 2(4) [40 CFR 122.44(k)] BMPs are to be used to abate the discharge of pollutants when:

(1) Authorized under Section 304(e) of the CWA for the control of toxic pollutants and hazardous substances from ancillary industrial activities;
(2) Authorized under Section 402(p) of the CWA for the control of storm water discharges;
(3) Numeric effluent limitations are infeasible; or
(4) The practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA.

DOW includes requirements to develop, implement, and maintain effective BMPs and a BMP Plan for individual and general permits.

1.5.5. Incorporation by Reference

When necessary to implement conditions or requirements that have not been directly developed through the permitting process, the permit may be conditioned to implement these conditions or requirements through incorporation by reference. Documents typically referenced by reference include: (1) consent orders, (2) agreed orders, (3) water quality certifications, and (4) other permits or authorizations.

1.6. State Conditions

State conditions are those conditions DOW has determined that are necessary to implement requirements promulgated under state or federal laws and regulations.

1.6.1. Certified Operators

Pursuant to 401 KAR 5:010 wastewater treatment plants and wastewater collection systems that accept wastewaters containing domestic sewage are to be operated by a certified operator. In accordance with KRS 224.10-110 and KRS 224.73-110 the Cabinet has established an operator's certification program that is administered by the Division of Compliance Assistance. Specific requirements of this program are found in 401 KAR 11:001 through 11:060.

1.6.2. Outfall Signage

KRS 224.18-760 establishes Kentucky as a member of the Ohio River Valley Water Sanitation Compact (ORSANCO). Article I of the Compact pledges faithful cooperation between the signatory states. Article IV authorizes the Commission to adopt, prescribe and promulgate rules, regulations and standards for administering and enforcing the Compact. Part V, Section A.3 of the ORSANCO pollution control standards for discharges to the Ohio River require that holders of an individual NPDES permit post and maintain a permanent marker having specific dimensions at each Ohio River outfall. DOW includes language in permits for discharges to the Ohio River requiring compliance with the ORSANCO signage requirements. For discharges to receiving waters other than the Ohio River DOW includes language recommending the installation of a permanent marker at each of the monitoring to better document and clarify these locations.

1.6.3. Monthly Operating Reports (MORs)

Pursuant 401 KAR 5:070, Section 3 [40 CFR 122.48, July 1, 2009] the permit shall incorporate monitoring requirements as appropriate to assure compliance with the permit limitations. In addition to the monitoring of effluent as specified by the permit the permittee shall conduct process control monitoring on a daily basis and record the data on a Monthly Operating Report (MOR) which shall be submitted with the Discharge Monitoring Reports. Process control monitoring is that monitoring performed by the operators of the wastewater treatment plant to determine if the wastewater system is operating at its optimum efficiency. This monitoring includes but is not limited to influent and effluent quality and quantity monitoring, chemical usage, sludge monitoring including volume produced, wasted, and disposed, and monitoring of internal units such as aeration basins and oxidation ditches.

1.6.4. Application Monitoring

In accordance with 401 KAR 5:075, Section 1 [40 CFR 124.3(a)(2), July 1, 2009] the Director shall not begin processing a permit until the applicant has fully complied with the application requirements for the permit. Pursuant to 401 KAR 5:060, Section 2(2)(b) POTWs are required to complete application Forms 1 and A as incorporated by reference in 401 KAR 5:060, Section 12(1)(a) and (b). Form A requires a minimum of 3 samples to be collected and analyzed. Additionally as stated in Section 1.2.1.1.1 Numeric Procedures DOW's reasonable potential analysis procedures require a minimum of 5 valid samples therefore an application shall be deemed complete only if all required information has been provided including the collection, analysis and reporting of 5 valid samples. To ensure that sufficient samples are collected and analyzed DOW shall impose at a minimum annual sampling for those parameters required to be analyzed and reported on the application. The results of the application monitoring shall be submitted on an annual DMR and summarized on the renewal application.

2. PERMIT-SPECIFIC LIMITS AND REQUIREMENTS DEVELOPMENT

This section of the Fact Sheet presents the limitations and conditions specific to the permitted facility and the specific process and procedures utilized by DOW in the development of the permit.

2.1. Synopsis of Application

2.1.1. Name and Address of Applicant

City of Marion
217 South Main Street
Marion, Kentucky 42064

2.1.2. Facility Location

Marion Wastewater Treatment Plant
530 Adams Street
Marion, Crittenden County, Kentucky

2.1.3. Description of Applicant's Operation

Treatment of domestic wastewater for the City of Marion and surrounding areas

2.1.4. Permitting Action

Reissuance of a minor KPDES permit for a municipality with an existing discharge

2.2. Receiving / Intake Waters

2.2.1. Receiving Waters

RECEIVING WATERS				
Receiving Water Name	**Use Classification**	**Antidegradation Categorization**	**7Q10 Low Flow (cfs)**	**Harmonic Mean Flow (cfs)**
Rush Creek	WAH PCR SCR DWS	HQ	0.0	0.0

2.2.2. Intake Waters – Nearest Downstream Intake

INTAKE WATERS						
Intake Water Name	**Public Water Supply Name**	**River Mile**	**Miles Downstream**	**County**	**7Q10 Low Flow (cfs)**	**Harmonic Mean Flow (cfs)**
Ohio River	Paducah Water Works / Paducah WTP	929.5	76	McCracken	51,000	175,000

2.3. Outfalls / Internal Monitoring Points / Instream Monitoring Points

OUTFALL						
Number	**Type**	**Description Of Wastewater**	**Receiving Water**	**River Mile**	**Latitude**	**Longitude**
001	Effluent	Treated Domestic Wastewater	Rush Creek	1.35	37°20'38.5"N	88°4'0.5"W

2.4. Treatment Provided

DESCRIPTION OF TREATMENT				
Number.	**Wastewater Type**	**Flow (MGD)**	**Treatment Train**	**Treatment Codes**
001	Domestic	0.66	Aerobic Digestion, Aeration, Activated Sludge, Clarification, Chlorine Disinfection, Dechlorination, Sludge Drying Beds, Landfill Disposal of Sludge	5A 3M 3A 1U 2F 2E 5H 5Q 4A

2.5. Proposed Effluent Limitations and Monitoring Requirements

The following tables identify the proposed effluent limitations and monitoring requirements for Outfall 001.

EFFLUENT LIMITATIONS							MONITORING REQUIREMENTS	
Effluent Characteristic	**Loadings (lbs/day)**		**Concentrations (specify units)**				**Monitoring Frequency**	**Sample Type**
	Monthly Average	**Weekly Average**	**Minimum**	**Monthly Average**	**Weekly Average**	**Maximum**		
Effluent Flow (MGD)	Report	Report	N/A	N/A	N/A	N/A	Continuous	Recorder
$CBOD_5$	110	165	N/A	20 mg/l	30 mg/l	N/A	1/Week	24-Hr Composite
Percent Removal $CBOD_5$	N/A	N/A	N/A	85 %	N/A	N/A	1/Month	Calculated
TSS	165	248	N/A	30 mg/l	45 mg/l	N/A	1/Week	24-Hr Composite
Percent Removal TSS	N/A	N/A	N/A	85 %	N/A	N/A	1/Month	Calculated
Ammonia (as mg/l NH_3N) May 1 – October 31	22.0	33.0	N/A	4.0 mg/l	6.0 mg/l	N/A	1/Week	24-Hr Composite
Ammonia (as mg/l NH_3N) November 1 – April 30	55.0	83.0	N/A	10 mg/l	15 mg/l	N/A	1/Week	24-Hr Composite
E. Coli (colonies/100 ml)[1]	N/A	N/A	N/A	130	240	N/A	1/Week	Grab
Dissolved Oxygen	N/A	N/A	7.0 mg/l	N/A	N/A	N/A	1/Week	Grab
pH (Standard Units)	N/A	N/A	6.0	N/A	N/A	9.0	1/Week	Grab
Total Residual Chlorine	N/A	N/A	N/A	0.011 mg/l	0.019 mg/l	N/A	1/Week	Grab

EFFLUENT LIMITATIONS							MONITORING REQUIREMENTS	
Effluent Characteristic	Loadings (lbs/day)		Concentrations (specify units)				Monitoring Frequency	Sample Type
	Monthly Average	Weekly Average	Minimum	Monthly Average	Weekly Average	Maximum		
Total Phosphorus	N/A	N/A	N/A	Report (mg/l)	Report (mg/l)	N/A	1/Week	24-Hr Composite
Total Nitrogen	N/A	N/A	N/A	Report (mg/l)	Report (mg/l)	N/A	1/Week	24-Hr Composite
Hardness (as mg/l $CaCO_3$)	N/A	N/A	N/A	Report (mg/l)	Report (mg/l)	N/A	1/Quarter	24-Hr Composite
Total Recoverable Cadmium	N/A	N/A	N/A	Report (mg/l)	Report (mg/l)	N/A	1/Quarter	24-Hr Composite
Total Recoverable Copper	N/A	N/A	N/A	Report (mg/l)	Report (mg/l)	N/A	1/Quarter	24-Hr Composite
[1]The effluent limitations for *Escherichia Coli* are 30 day and 7 day Geometric Means. Total Nitrogen is the summation of the analytical results for Total Nitrates, Total Nitrites, and Total Kjeldahl Nitrogen								

2.6. Proposed Influent Monitoring Requirements

The following tables identify the proposed influent limitations and monitoring requirements for Outfall 001.

INFLUENT MONITORING REQUIREMENTS							MONITORING REQUIREMENTS	
Influent Characteristic	Loadings (lbs/day)		Concentrations (specify units)				Monitoring Frequency	Sample Type
	Monthly Average	Weekly Average	Minimum	Monthly Average	Weekly Average	Maximum		
Influent Flow (MGD)	Report	Report	N/A	N/A	N/A	N/A	Continuous	Recorder
$CBOD_5$	Report	Report	N/A	Report (mg/l)	Report (mg/l)	N/A	1/Week	24-Hr Composite
TSS	Report	Report	N/A	Report (mg/l)	Report (mg/l)	N/A	1/Week	24-Hr Composite

2.7. Limits Development

The proposed effluent limitations and monitoring requirements were developed using the processes and procedures detailed in Section 1.

2.7.1. Specific Technology-Based Effluent Requirements

2.7.1.1. Biochemical Oxygen Demand (BOD_5), Total Suspended Solids (TSS), Percent Removal, and pH

The applicable technology-based effluent limitations for BOD_5 and TSS are 30 mg/l as a monthly average and 45 mg/l as weekly average, 85 percent for Percent Removal and between 6.0 and 9.0 standard units for pH. These limitations are representative of the secondary treatment requirements for POTWs established in 401 KAR 5:080, Section 8 [40 CFR 133, July 1, 2008]. See Section 1.1 Technology-Based Effluent Requirements for more details.

2.7.1.2. Ammonia and Dissolved Oxygen

DOW utilizes the QUAL2K Model to develop water quality limits for the parameters associated with biochemically degradable wastes, i.e., BOD_5, Ammonia, and Dissolved Oxygen. Because Kentucky has established a technology-based standard for BOD_5 of 30 mg/l, DOW has set the upper bound for limitations derived through the QUAL2K Model at this standard. The associated ammonia and dissolved oxygen requirements are 20 mg/l as a monthly average for ammonia and 2.0 mg/l as a minimum for dissolved oxygen. DOW considers these requirements equivalent to technology-based requirements for these parameters.

2.7.2. Specific Water Quality-Based Effluent Requirements

APPLICABLE WATER QUALITY CRITERIA				
Effluent Characteristic	**Criteria**			
	Human Health		**Aquatic Life**	
	DWS	**FC**	**Acute**	**Chronic**
Alkalinity 401 KAR 10:031 Section 4(1)(a)	Natural alkalinity as $CaCO_3$ shall not be reduced by more than 25%. If natural alkalinity is below 20 mg/l as $CaCO_3$, there shall not be a reduction in the natural level. Alkalinity shall not be reduced or increased to a degree that may adversely affect the aquatic community.			
Ammonia 401 KAR 10:031 Section 4(1)(i)	The concentration of the un-ionized form shall not be greater than 0.05 mg/l at any time instream after mixing. Un-ionized ammonia shall be determined from values for total ammonia-N, in mg/l, pH and temperature, by means of the following equations: $Y = \frac{1.2(\text{Total ammonia - N})}{1+10^{(pK_a - pH)}}$ $\quad pK_a = 0.0902 + \left(\frac{2730}{273.2 + T_c}\right)$ Where: T_c = temperature, degrees Celsius. Y = un-ionized ammonia (mg/l);			
Antimony 401 KAR 10:031 Section 6	5.6	640	N/A	N/A
Arsenic 401 KAR 10:031 Section 6	10.0	N/A	340	150
Beryllium 401 KAR 10:031 Section 6	4	N/A	N/A	N/A

APPLICABLE WATER QUALITY CRITERIA				
Effluent Characteristic	**Criteria**			
	Human Health		**Aquatic Life**	
	DWS	**FC**	**Acute**	**Chronic**
Cadmium 401 KAR 10:031 Section 6	5	N/A	$e^{[1.0166\ln(Ha)-3.924]}$	$e^{[0.7409\ln(Ha)-4.719]}$
Chloride 401 KAR 10:031 Section 6	250,000	N/A	1,200,000	600,000
Chromium 401 KAR 10:031 Section 6	100	N/A	N/A	N/A
Copper 401 KAR 10:031 Section 6	1,300	N/A	$e^{[0.9422\ln(Ha)-1.700]}$	$e^{[0.8545\ln(Ha)-1.702]}$
DO 401 KAR 10:031 Section 4(e)	Shall be maintained at a minimum concentration of 5.0 mg/l as a 24-hour average and shall not be less than 4.0 mg/l as an instantaneous minimum.			
Escherichia coli 401 KAR 10:031 Section 7(1)(a)	Shall not exceed 130 colonies per 100 ml as a geometric mean based on not less than 5 samples taken during a 30 day period. Shall not exceed 240 colonies per 100 ml in 20% or more of all samples taken during a 30 day period.			
Iron 401 KAR 10:031 Section 6	300	N/A	4,000	1,000; 3,500 if aquatic life has not shown to be adversely affected
Lead 401 KAR 10:031 Section 6	15	N/A	$e^{[1.273\ln(Ha)-1.460]}$	$e^{[1.273\ln(Ha)-4.705]}$
Mercury 401 KAR 10:031 Section 6	2.0	0.051	1.4	0.77

APPLICABLE WATER QUALITY CRITERIA				
Effluent Characteristic	**Criteria**			
	Human Health		**Aquatic Life**	
	DWS	**FC**	**Acute**	**Chronic**
Minimum Criteria 401 KAR 10:031 Section 2	Waters shall not be aesthetically or otherwise degraded by substances that: settle to form objectionable deposits; float as debris, scum, oil, or other matter to form a nuisance; produce objectionable color, odor, taste, or turbidity; injure, are chronically or acutely toxic to or produce adverse physiological or behavioral responses in humans, animals, fish, and other aquatic life; produce undesirable aquatic life or result in the dominance of nuisance species; or cause fish flesh tainting. The concentration of phenol shall not exceed 300 mg/l as an instream value.			
Nickel 401 KAR 10:031 Section 6	610	4,600	$e^{[0.8460\ln(Ha)+2.255]}$	$e^{[0.8460\ln(Ha)+0.0584]}$
Nutrients 401 KAR 10:031 Section 1	In lakes and reservoirs and their tributaries, and other surface waters where eutrophication problems may exist, nitrogen, phosphorus, carbon, and contributing trace element discharges shall be limited in accordance with: the scope of the problem; the geography of the affected area; and relative contributions from existing and proposed sources.			
pH 401 KAR 10:031 Section 4 (1)(b)	Shall not be less than 6.0 or more than 9.0 and shall not fluctuate more than 1.0 pH unit over a period of 24 hours.			
Phenol 401 KAR 10:031 Section 6	21,000	1,700,000	N/A	N/A
Selenium 401 KAR 10:031 Section 6	170	4,200	20	5.0
Silver 401 KAR 10:031 Section 6	N/A	N/A	$e^{[1.72\ln(Ha)-6.59]}$	N/A
SS 401 KAR 10:031 Section 4(1)(h)	The addition of SS that may alter the stream bottom so as to adversely affect productive aquatic communities shall be prohibited.			
Sulfate 401 KAR 10:031 Section 6	250,000	N/A	N/A	N/A

APPLICABLE WATER QUALITY CRITERIA				
Effluent Characteristic	**Criteria**			
	Human Health		**Aquatic Life**	
	DWS	**FC**	**Acute**	**Chronic**
Temperature 401 KAR 10:031 Section 4(1)(c)	Shall not exceed 31.7° C (89° F). The normal daily and seasonal temperature fluctuations that existed before the addition of heat due to other than natural causes shall be maintained. The Cabinet may determine allowable surface water temperatures on a site-specific basis utilizing available data that shall be based on the effects of temperature on the aquatic biota that utilize specific surface waters of the Commonwealth that may be affected by person-induced temperature changes.			
Thallium 401 KAR 10:031 Section 6	0.24	0.47	N/A	N/A
TDS or SC 401 KAR 10:031 Section 4(1)(f)	Shall not be changed to the extent that the indigenous aquatic community is adversely affected. Constituents of TDS include calcium, magnesium, sodium, and potassium, as well as chloride and sulfate.			
TDS 401 KAR 10:031 Section 6	250,000	N/A	N/A	N/A
Total Residual Chlorine 401 KAR 10:031 Section 4(1)(k)	Shall not exceed an acute criteria value of 19 µg/l or a chronic criteria value of 11 µg/l.			
TSS 401 KAR 10:031 Section 4(1)(g)	Shall not be changed to the extent that the indigenous aquatic community is adversely affected.			

APPLICABLE WATER QUALITY CRITERIA				
Effluent Characteristic	**Criteria**			
	Human Health		**Aquatic Life**	
	DWS	**FC**	**Acute**	**Chronic**
Toxic Pollutants & Nonconventional Pollutants 401 KAR 10:031 Section 4(1)(j) 401 KAR 10:031 Section 6	The allowable instream concentration of toxic substances, or whole effluents containing toxic substances, which are noncumulative or nonpersistent with a half-life of less than 96 hours, shall not exceed 0.1 of the 96-hour LC_{50} of representative indigenous or indicator aquatic organisms, or a chronic toxicity unit of 1.00 utilizing the LC_{25}. The allowable instream concentration of toxic substances, or whole effluents containing toxic substances, which are bioaccumulative or persistent, including pesticides, if not specified elsewhere in 401 KAR 10:031 Section 4, shall not exceed 0.01 of the 96-hour LC_{50} of representative indigenous or indicator aquatic organisms, a chronic toxicity unit of 1.00 utilizing the IC_{25}. In the absence of acute criteria for pollutants listed in 401 KAR 10:031 Section 6, for other substances known to be toxic but not listed in 401 KAR 10:031, or for whole effluents that are acutely toxic, the allowable instream concentration shall not exceed the LC_1 or 1/3 the LC_{50} concentration derived from toxicity tests on representative indigenous or indicator aquatic organisms or exceed 0.3 acute toxicity units. If specific application factors have been determined for a toxic substance or whole effluent such as an acute to chronic ratio or water effect ratio, they may be used instead of the 0.1 and 0.01 factors listed in this subsection upon demonstration by the applicant that the application factors are scientifically defensible. Allowable instream concentrations for specific pollutants for the protection of warm water aquatic habitat are listed in 401 KAR 10:031 Section 6. These concentrations are based on protecting aquatic life from acute and chronic toxicity and shall not be exceeded. Specific pollutants expected in the wastewater have been highlighted in this table.			
Zinc 401 KAR 10:031 Section 6	7,400	26,000	$e^{[0.84736\ln(Ha)+0.884]}$	$e^{[0.84736\ln(Ha)+0.884]}$
(Ha) indicates hardness in mg/l as $CaCO_3$.				

2.7.3. Reported Discharge Levels

REPORTED DISCHARGE LEVELS									
Effluent Characteristics	**Units**	**Minimum**		**Monthly Average**		**Weekly Average**		**Maximum**	
		DMR	**Application**	**DMR**	**Application**	**DMR**	**Application**	**DMR**	**Application**
Flow	MGD	NR	NR	0.557	NR	1.086	NR	1.96	NR
$CBOD_5$	mg/l	NR	NR	3.0	NR	4.3	NR	9.0	NR
Percent Removal $CBOD_5$	%	93.0	NR	97.2	NR	NR	NR	99.0	NR
TSS	mg/l	NR	NR	4.6	NR	7.4	NR	16.0	NR
Percent Removal TSS	%	88.0	NR	96.7	NR	NR	NR	99.0	NR
Ammonia (May 1 – October 31)	mg/l	NR	NR	1.86	NR	2.75	NR	4.6	NR
Ammonia (November 1 – April 30)	mg/l	NR	NR	1.6	NR	2.81	NR	5.0	NR

REPORTED DISCHARGE LEVELS									
Effluent Characteristics	Units	Minimum		Monthly Average		Weekly Average		Maximum	
		DMR	Application	DMR	Application	DMR	Application	DMR	Application
E. coli (colonies/100 ml)	#/100 ml	NR	NR	8.8	NR	25.7	NR	77.0	NR
Dissolved Oxygen	mg/l	7.0	NR	NR	NR	NR	NR	NR	NR
pH (Standard Units)	SU	6.7	NR	NR	NR	NR	NR	8.0	NR
Total Residual Chlorine	mg/l	NR	NR	<0.01	NR	<0.01	NR	<0.01	NR
Hardness (as mg/l $CaCO_3$)	mg/l	NR	NR	144.2	NR	NR	NR	190	NR
Total Recoverable Cadmium	mg/l	NR	NR	0.0011	NR	NR	NR	0.002	NR
Total Recoverable Copper	mg/l	NR	NR	0.0428	NR	NR	NR	0.176	NR
Total Phosphorus	mg/l	NR	NR	2.1	NR	3.2	NR	13.9	NR
Total Nitrogen	mg/l	NR	NR	NR	NR	NR	NR	NR	NR
NR means Not Reported.									

2.7.4. Reported Influent Levels

REPORTED DISCHARGE LEVELS									
Effluent Characteristics	Units	Minimum		Monthly Average		Weekly Average		Maximum	
		DMR	Application	DMR	Application	DMR	Application	DMR	Application
Flow	MGD	NR	NR	NR	NR	NR	NR	NR	NR
$CBOD_5$	mg/l	NR	NR	121.3	NR	178.2	NR	461	NR
TSS	mg/l	NR	NR	171.7	NR	206.9	NR	394	NR
NR means Not Reported.									

2.7.5. Mixing Zone (MZ) Analysis

The permittee did not request a mixing zone.

2.7.6. Effluent Limitation Calculations Using SSTWAM

The final effluent limits and reasonable potential calculations are performed by inputting discharge quality and quantity and receiving water quality and quantity into the SSTWAM spreadsheet. See Sections 3.6 and 3.7 of this fact sheet for the input information and output of SSTWAM.

2.7.7. Reasonable Potential

In accordance with the reasonable potential procedures outlined in Section 1.2.1, DOW has determined that biochemically degradable wastes have reasonable potential to cause or contribute to an excursion of specific water quality standards. Therefore DOW is proposing effluent limitations for the following pollutants: $CBOD_5$, TSS, Ammonia, E coli, Dissolved Oxygen, pH, and Total Residual Chlorine.

2.7.7.1. $CBOD_5$, Ammonia, and Dissolved Oxygen

The water quality based effluent limitations for these parameters were developed using the QUAL2K model. The results of this model are presented in the following table.

QUAL2K WASTELOAD ALLOCATION MODEL RESULTS				
Effluent Characteristics	**Units**	**Minimum**	**Monthly Average**	**Weekly Average**
$CBOD_5$	mg/l	N/A	20	30
Ammonia (May 1 – October 31)	mg/l	N/A	4.0	6.0
Ammonia (November 1 – April 30)	mg/l	N/A	10	15
Dissolved Oxygen	mg/l	7.0	N/A	N/A

2.7.7.2. TSS

Kentucky's water quality standards do not include numeric criteria for TSS but includes a narrative standard (see Applicable Water Quality Criteria Table above). DOW has compared the TSS loading, derived using technology-based standards, from this facility with the TSS loading of the receiving water. From this comparison DOW has determined that this facility will not significantly increase the TSS loading on the stream therefore technology-based effluent limitations are adequate.

2.7.7.3. Alkalinity

The standard for this water characteristic states that natural alkalinity shall not be reduced by more than 25%. In order to reduce the alkalinity there must be an addition of acid. In reviewing quality data for the wastewaters generated by the facility DOW did not find the wastewater to be acidic. Therefore DOW has determined that reasonable potential does not exist and does not propose any limitations or monitoring requirements.

2.7.7.4. Minimum Criteria

The minimum criteria for all waters specified in 401 KAR 10:031, Section 2 are categorical and not pollutant-specific except for phenol, which has an instream criteria of 300 mg/l; therefore the selection of an indicator pollutant or pollutant characteristic that would adequately address the criteria is not feasible. However, DOW has determined that a reasonable potential exists with all dischargers to cause or contribute to an excursion of these categorical requirements. As specific indicator pollutants and limitations are not feasible DOW has included these criteria as part of the reopener required in all permits.

2.7.7.5. Nutrients

These effluent characteristics are generally associated with sanitary wastewaters and organic effluents. While this sanitary facility does include domestic wastewater and organic processes, these constituents are not expected to be present in significant quantities and are therefore excluded from the RPA.

2.7.7.6. SS

DOW has determined that sanitary treatment facilities designed, constructed, operated and maintained to comply with TSS requirements do not have a reasonable potential to cause or contribute to an excursion above the narrative water quality standard for SS. Therefore, DOW is not proposing any additional requirements for this parameter.

2.7.7.7. Temperature, Toxic Pollutants and Nonconventional Pollutants

Thermal pollution or heat loads are typically associated with industrial facilities where large volumes of cooling water are utilized. Toxic pollutants and nonconventional pollutants are generally associated with industrial activities. Sanitary wastewaters are not a significant source of thermal pollution, heat load, toxic pollutants or nonconventional pollutants, therefore except as noted in the following sections DOW has determined that reasonable potential for these pollutants does not exist and does not propose any additional requirements.

2.7.7.8. pH

As previously stated pH is addressed under the secondary treatment or technology-based effluent standards for POTWs. In accordance with Kentucky's RPA procedures, if a promulgated technology-based effluent standard exists, then the discharge has reasonable potential, and therefore effluent limitations and monitoring requirements shall be applied for those effluent characteristics addressed by the technology-based standard.

2.7.7.9. Total Recoverable Metals Cadmium, Copper, Lead, and Zinc

Reasonable potential was evaluated for the total recoverable metals cadmium, copper, lead, and zinc. The analysis showed no potential for lead or zinc to violate water quality standards. For total recoverable cadmium, the analysis proposed an average limit of 0.355 ug/l and a maximum limit of 2.13 ug/l, and for total recoverable copper, the analysis proposed an average limit of 12.75 ug/l and a maximum limit of 14.0 ug/l. However, pursuant to 40 CFR 125.3(c)(2) incorporated by 401 KAR 5:080, Section 2(3) it is DOW's best professional judgment that more data is needed to conduct an accurate RPA. The data used in this analysis was sampled yearly at the same time each year, which does not take into account seasonal variations in wastestreams. Therefore, DOW will require quarterly monitoring for Total Hardness, Total Recoverable Copper, and Total Recoverable Zinc in order to provide necessary data prior to the determination of an appropriate limitation.

2.7.8. Final Determination of Limits

2.7.8.1. Ammonia, $CBOD_5$ and Dissolved Oxygen

The effluent limitations for these parameters were derived using the QUAL2K Model which indicated that water quality-based standards for this discharge were appropriate.

2.7.8.2. E. coli and pH

The effluent limits for these parameters are based on the water quality standards.

2.7.8.3. Total Residual Chlorine

The effluent limits for this parameter were derived from the water quality standards.

2.7.8.4. TSS

The effluent requirements for this pollutant are consistent with the technology-based standards established for biochemically degradable wastes.

2.7.8.5. Total Phosphorus and Total Nitrogen

The monitoring requirements for these parameters are consistent with the requirements of 401 KAR 5:065, Section 2(4) [40 CFR 122.44(i)(1)(ii)]. Total Nitrogen is the summation of the analytical results for Total Nitrates, Total Nitrites, and Total Kjeldahl Nitrogen.

2.8. Antidegradation

The conditions of 401 KAR 10:029, Section 1, have been satisfied. This permitting action is the reissuance of a KPDES permit authorizing discharges from a publicly owned regional wastewater treatment plant. In accordance with 401 KAR 10:030, Section 1(3)(b)2b the approval of a POTW's regional facility plan pursuant to 401 KAR 5:006 shall constitute compliance with socioeconomic demonstration and alternatives analysis of 401 KAR 10:030, Section 1(3)3. For those discharges subject to the provisions of 401 KAR 10:030, Section 1(3)(b)5, the permittee shall install, operate, and maintain wastewater treatment facilities consistent with those identified below:

Aerobic Digestion, Aeration, Activated Sludge, Clarification, Chlorine Disinfection, Dechlorination, Sludge Drying Beds, Landfill Disposal of Sludge

2.9. Schedule of Compliance

The permittee will comply with all effluent limitations by the effective date of the permit except as allowed pursuant to 401 KAR 5:080, Section 6. Special KPDES program requirements related to new sources and new discharges shall be as established in 40 CFR 122.29, effective July 1, 2008.

2.10. Special Conditions

2.10.1. Pretreatment Program

On February 22, 2008 the permittee's pretreatment program was placed in an inactive status. DOW approved the inactivation of the pretreatment program pursuant to a demonstration by the permittee that conditions have changed such that an active pretreatment program was no longer required. The changes that occurred are as follows: the last significant industrial user, Potter-Brumfield Seimens Corporation, stopped discharging to the Marion Wastewater Treatment Plant when they closed in June 2002.

Although the pretreatment program is currently inactive the permittee shall continue to enforce the general and specific prohibitions listed in Sections 1.5.1.1.1 and 1.5.1.1.2 respectively of this fact sheet. The permittee shall at a minimum conduct annual industrial wastes surveys to determine if there has been changes to the industrial users' discharges that would necessitate the development an implementation of a pretreatment program. In the event the permittee becomes aware of a new industrial user or modification to an existing industrial user the permittee shall require the submission of an industrial waste survey fore evaluation. Should any industrial waste survey indicate that a pretreatment program is required the permittee shall reactivate the pretreatment program immediately and shall notify DOW of the reactivation within 5 days. The permittee shall submit to DOW an annual report by January 28th of the following year detailing the results of the annual and any other industrial waste surveys reviewed.

2.10.2. BMP Plan

In accordance with 401 KAR 5:065, Section 2(4) [40 CFR 122.44(k)], permits are to include Best Management Practices (BMPs) to control or abate the discharge of pollutants when: 1) authorized under section 304(e) of the CWA for the control of toxic pollutants and hazardous substances from ancillary industrial activities; 2) authorized under Section 402(p) of the CWA for the control of storm water discharges; 3) numeric effluent limitations are infeasible; or 4) the practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA. The permittee shall develop and implement a Best Management Practices (BMP) plan which prevents or minimizes the potential for the release of "BMP pollutants" from ancillary activities through plant site runoff; spillage or leaks, sludge or waste disposal; or drainage from raw material storage. The BMP plan will be prepared by the permittee unless the permittee can demonstrate through the submission of a BMP outline that the elements and intent of the BMP have been fulfilled through the use of existing plans such as the Spill Prevention Control and Countermeasure (SPCC) plans, contingency plans, and other applicable documents. The permittee shall submit the BMP Plan to DOW at least 90 days of the effective date of this permit and implementation of this plan shall be within 180 days of the effective date of this permit.

2.11. State Conditions

2.11.1. Outfall Signage

The KPDES permit establishes monitoring points, effluent limitations, and other conditions to address discharges from the permitted facility. In an effort to better document and clarify these locations the permittee should place and maintain a permanent marker at each of the monitoring locations.

2.11.2. Certified Operators

Pursuant to 401 KAR 5:010 the POTW's treatment plant shall be under the primary responsibility of a certified operator holding an active Class 2 treatment certificate:

A treatment plant with a design capacity of more than 50,000 gallons per day, but less than or equal to two (2) million gallons per day shall be under the primary responsibility of a certified operator holding an active Class II, III, or IV treatment certificate.

2.11.3. Application Monitoring

To ensure that sufficient samples are collected and analyzed DOW is imposing annual sampling and reporting for those parameters in Sections A.12 and B.6 of KPDES Form A. The results of the application monitoring shall be submitted on an annual DMR and summarized on the renewal application.

3. OTHER INFORMATION

3.1. Permit Duration

The permit shall have a duration of five (5) years from the effective unless modified or reissued. This facility is in the Tradewater / Green Basin Management Unit as per the Kentucky Watershed Management Framework.

3.2. Permit and Public Notice Information

The application, draft permit, fact sheet and public notice are available on the DOW Public Notice web page and the Department of Environmental Protection's Pending Approvals Search web page at:

http://water.ky.gov/Pages/PublicNotices.aspx:

http://dep.gateway.ky.gov/eSearch/Search_Pending_Approvals.aspx?Program=Wastewater&NumDaysDoc=30

Comments may be filed electronically at the following e-mail address: DOWPublicNotice@ky.gov

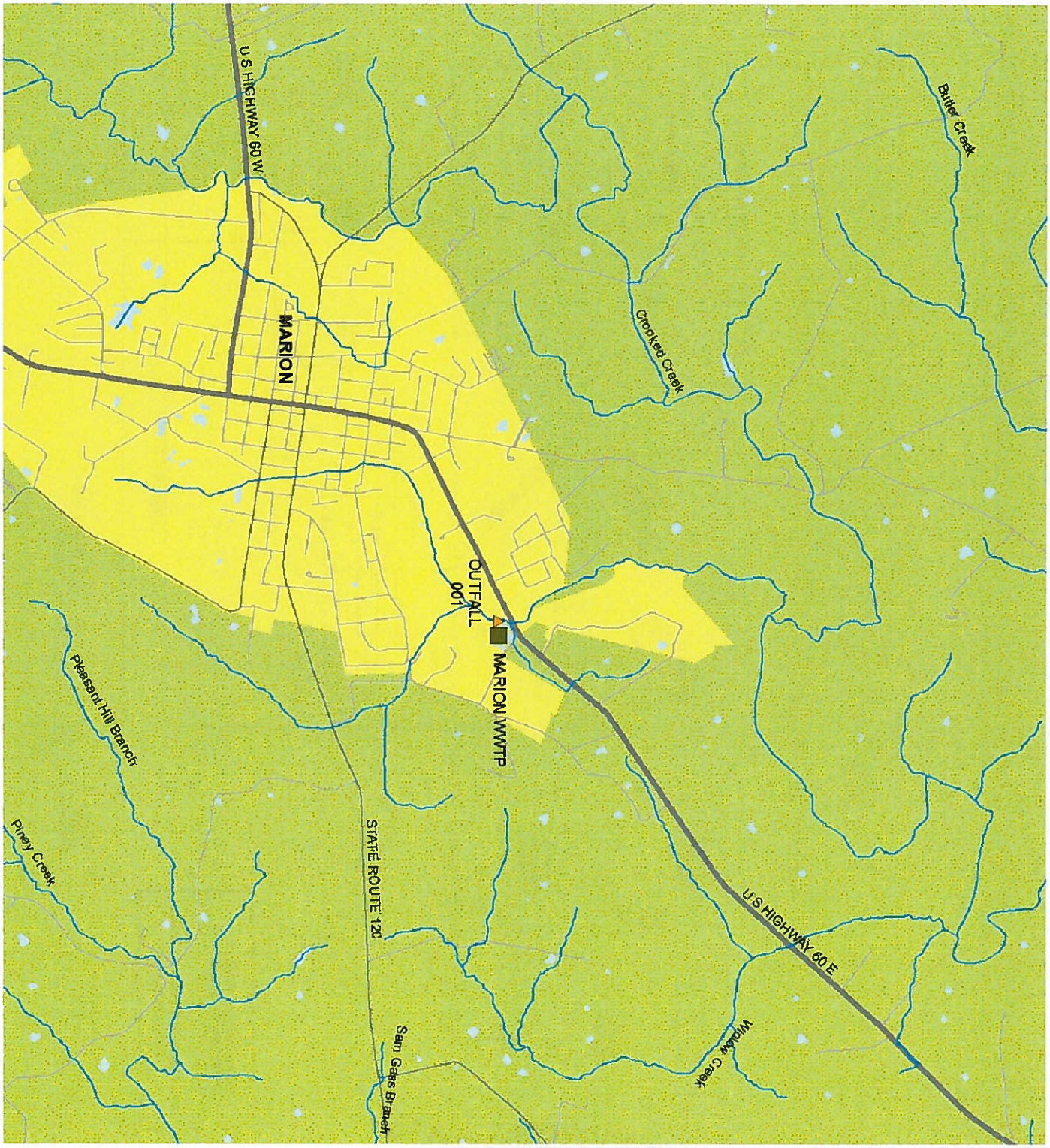
Or by sending written comments to:

Division of Water
Surface Water Permits Branch
200 Fair Oaks Lane
Frankfort, Kentucky 40601

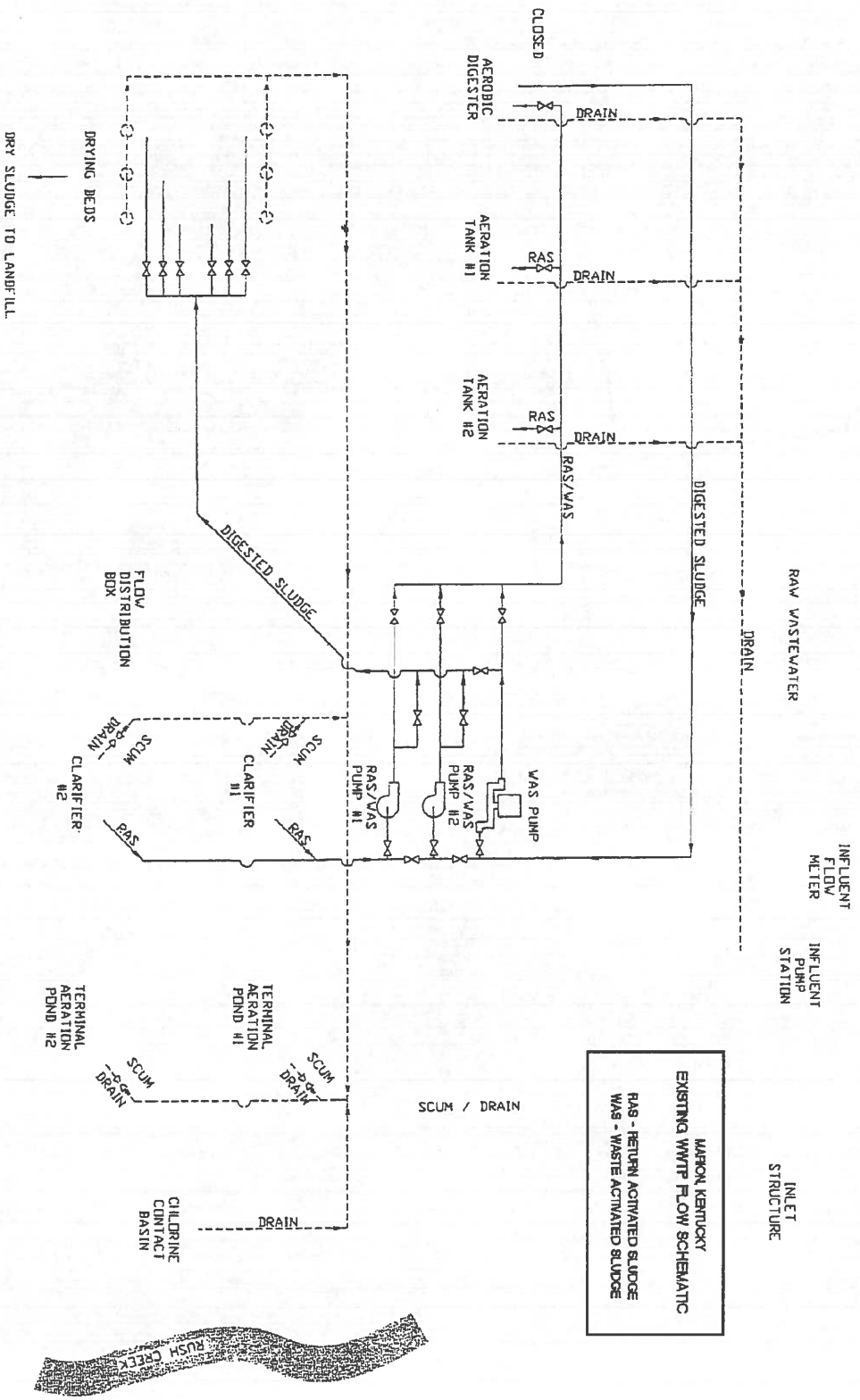
3.3. References and Cited Documents

All material and documents referenced or cited in this fact sheet are parts of the permit information as described above and are readily available at the Division of Water Central Office. Information regarding these materials may be obtained from the Division of Water's Open Records Coordinator at (502) 564-3410 or by e-mail at dowopenrecords@ky.gov.

3.4. Location Map



3.5. Flow Diagram



3.6. SSTWAM Input

Permit Writer	William Shane		Date Entered	10/3/2012				
Facility Name	Marion WWTP							
KPDES No.	KY0020061		Outfall No.	001				
Effluent Characteristics								
Flow	1.021	cfs						
Note: Use design flow for municipals, maximum flows for industrials, and average maximum flows for stormwater								
Hardness	144.2	mg/l						
Acute/Chronic Ratio	0.1							
Note: Non-bioaccumulative or Non-persistent ACR = 0.1 | Bioaccumulative or Persistent ACR = 0.01								
Receiving Water Characteristics								
Name	Rush Creek				Latitude	37°20'38.5"N	Longitude	88°4'0.5"W
Flow	7Q10	0 cfs	HM	0 cfs				
Hardness	100	mg/l	pH	7.5 std units	Temperature		20	°C
Note: Default value for Hardness is 100, Default value for pH is 7.5, Default value for Temperature is 20								
Zone of Initial Dilution	1		Mixing Zone	0				
Note: Default value for ZID is 1.0 , Default value for Mixing Zone is 0								
Intake Water Characteristics								
Name	Paducah Water Works / Paducah WTP				Latitude	37°5'56.8"N	Longitude	88°36'26.6"W
Flow	7Q10	51000 cfs	HM	175000 cfs				
Additional Factors								
Is the receiving water impaired for iron?			N	Y Or N				
Is the facility new?			N	Y Or N				
Is facility a major or discharge bioaccumulative pollutants?			N	Y Or N				
Does facility discharge to the Ohio River?			N	Y Or N				
Is discharge sanitary wastewater?			Y	Y Or N				

3.7. SSTWAM Output

Effluent Characteristic	Units	Average Limitation	Average Discharge %	Maximum Limitation	Maximum Discharge %	Justification	Requirement	RPA
Antimony	ug/L	640	0.00	N/A	N/A	Fish	No Requirement	
Arsenic	ug/L	150	0.00	340	0.00	Chronic	No Requirement	
Beryllium	ug/L	199808.1136	0.00	N/A	N/A	DWS	No Requirement	
Cadmium	ug/L	0.354929176	309.92	2.133184665	93.76	Chronic	Limit	X
Chromium	ug/L	4995202.84	0.00	N/A	N/A	DWS	No Requirement	
Copper	ug/L	12.75419306	335.57	13.99907631	1257.23	Acute	Limit	X
Cyanide, Free	ug/L	5.2	0.00	22	0.00	Chronic	No Requirement	
Lead	ug/L	3.069991592	28.40	81.64308705	2.45	Chronic	No Requirement	X
Mercury	ug/L	0.051	0.00	1.4	0.00	Fish	No Requirement	
Nickel	ug/L	71.09636684	0.00	469.1741293	0.00	Chronic	No Requirement	
Phenol	ug/L	1700000	0.00	N/A	N/A	Fish	No Requirement	
Selenium	ug/L	5	0.00	20	0.00	Chronic	No Requirement	
Silver	ug/L	N/A	N/A	3.784420307	0.00	Acute	No Requirement	
Thallium	ug/L	0.47	0.00	N/A	N/A	Fish	No Requirement	
Zinc	ug/L	119.8164153	23.70	119.8164153	27.54	Acute	No Requirement	X